YAMAHA

XC50V

SERVICE MANUAL

LIT-11616-19-49

3D1-F8197-10

EAS00000

XC50V 2005
SERVICE MANUAL
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NOTICE

This manual was produced by the Yamaha Motor Taiwan Company, Ltd. primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to include all the knowledge of a mechanic in one manual. Therefore, anyone who uses this book to perform maintenance and repairs on Yamaha vehicles should have a basic understanding of mechanics and the techniques to repair these types of vehicles. Repair and maintenance work attempted by anyone without this knowledge is likely to render the vehicle unsafe and unfit for use.

Yamaha Motor Taiwan Company, Ltd. is continually striving to improve all of its models. Modifications and significant changes in specifications or procedures will be forwarded to all authorized Yamaha dealers and will appear in future editions of this manual where applicable.

NOTE:
Designs and specifications are subject to change without notice.

EAS00005

IMPORTANT MANUAL INFORMATION

Particularly important information is distinguished in this manual by the following.
The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

⚠ The Safety Alert Symbol means ATTENTION] BECOME ALERT! YOUR SAFETY IS INVOLVED!

⚠WARNING Failure to follow WARNING instructions could result in severe injury or death to the scooter operator, a bystander or a person inspecting or repairing the scooter.

CAUTION: A CAUTION indicates special precautions that must be taken to avoid damage to the scooter.

NOTE: A NOTE provides key information to make procedures easier or clearer.

HOW TO USE THIS MANUAL

This manual is intended as a handy, easy-to-read reference book for the mechanic. Comprehensive explanations of all installation, removal, disassembly, assembly, repair and check procedures are laid out with the individual steps in sequential order.

① The manual is divided into chapters. An abbreviation and symbol in the upper right corner of each page indicate the current chapter.
Refer to “SYMBOLS”.

② Each chapter is divided into sections. The current section title is shown at the top of each page, except in Chapter 3 (“PERIODIC CHECKS AND ADJUSTMENTS”), where the sub-section title(s) appears.

③ Sub-section titles appear in smaller print than the section title.

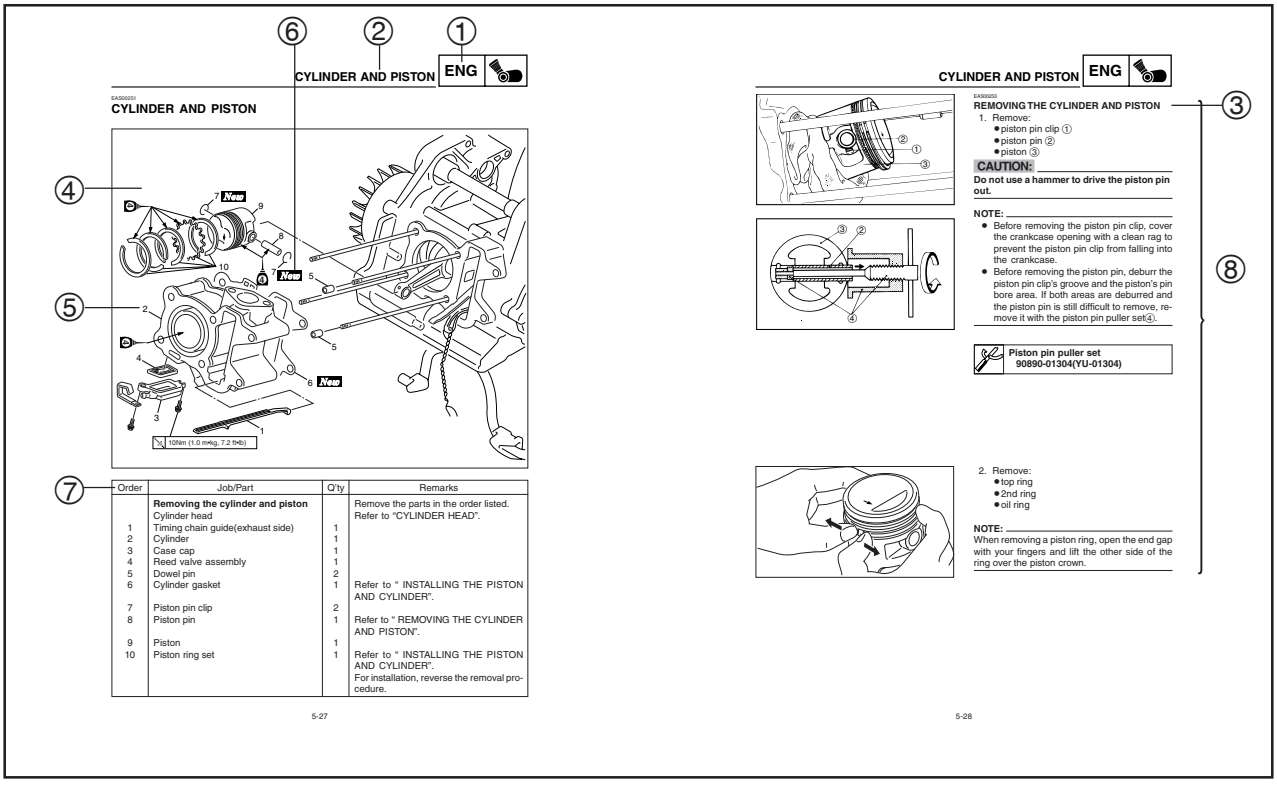
④ To help identify parts and clarify procedure steps, there are exploded diagrams at the start of each removal and disassembly section.

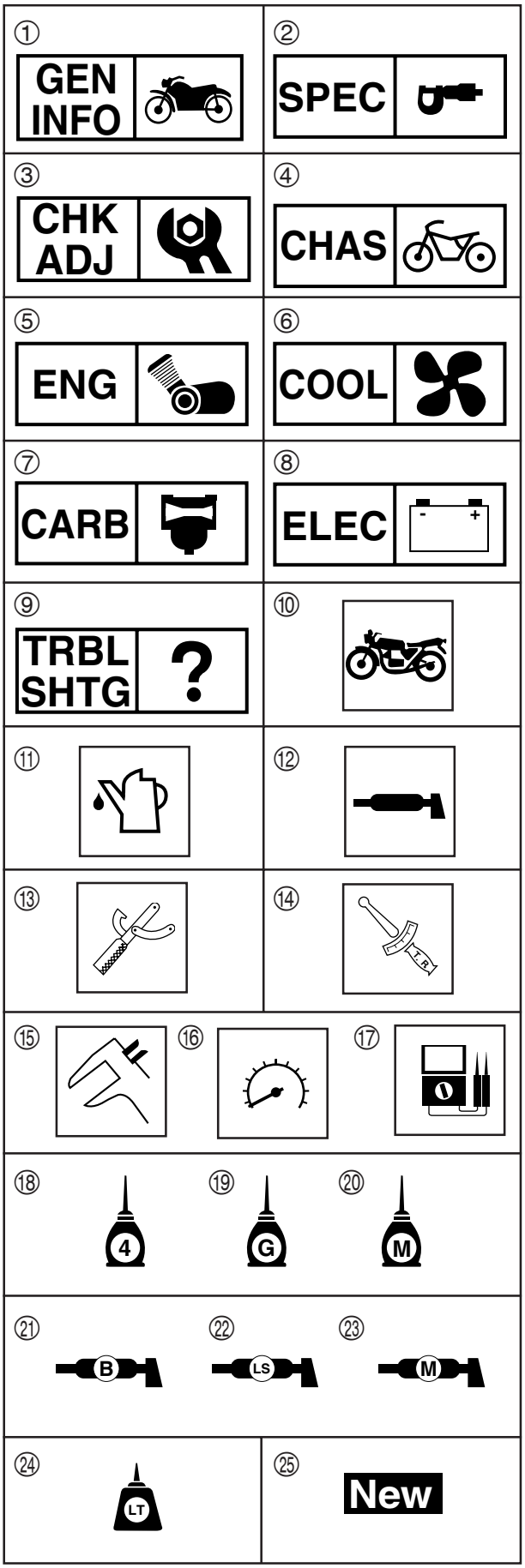
⑤ Numbers are given in the order of the jobs in the exploded diagram. A circled number indicates a disassembly step.

⑥ Symbols indicate parts to be lubricated or replaced.
Refer to “SYMBOLS”.

⑦ A job instruction chart accompanies the exploded diagram, providing the order of jobs, names of parts, notes in jobs, etc.

⑧ Jobs requiring more information (such as special tools and technical data) are described sequentially.





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SYMBOLS

The following symbols are not relevant to every vehicle.

Symbols ① to ⑨ indicate the subject of each chapter.

① General information
② Specifications
③ Periodic checks and adjustments
④ Chassis
⑤ Engine
⑥ Cooling system
⑦ Carburetor(s)
⑧ Electrical system
⑨ Troubleshooting

Symbols ⑩ to ⑰ indicate the following.

⑩ Serviceable with engine mounted
⑪ Filling fluid
⑫ Lubricant
⑬ Special tool
⑭ Tightening torque
⑮ Wear limit, clearance
⑯ Engine speed
⑰ Electrical data

Symbols ⑱ to ㉓ in the exploded diagrams indicate the types of lubricants and lubrication points.

⑱ Engine oil
⑲ Gear oil
⑳ Molybdenum-disulfide oil
㉑ Wheel-bearing grease
㉒ Lithium-soap- based grease
㉓ Molybdenum-disulfide grease

Symbols ㉔ to ㉕ in the exploded diagrams indicate the following.

㉔ Apply locking agent (LOCTITE®)
㉕ Replace the part

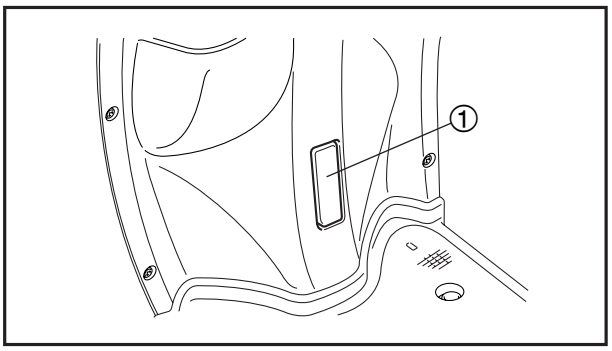
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CHAPTER 1
GENERAL INFORMATION

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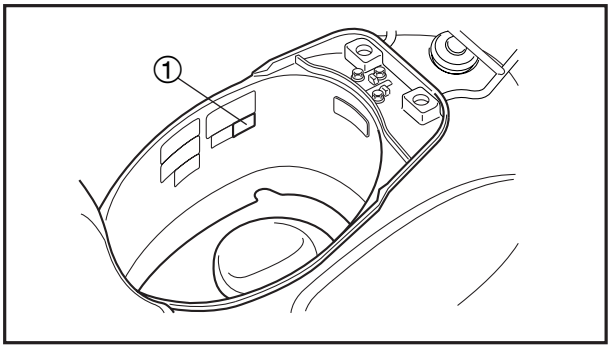
GENERAL INFORMATION

SCOOTER IDENTIFICATION

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VEHICLE IDENTIFICATION NUMBER

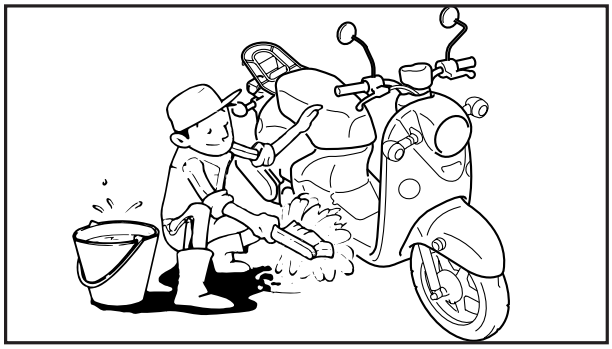
The vehicle identification number ① is stamped into the steering head pipe.



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MODEL LABEL

The model label ① is affixed to the trunk. This information will be needed to order spare parts.

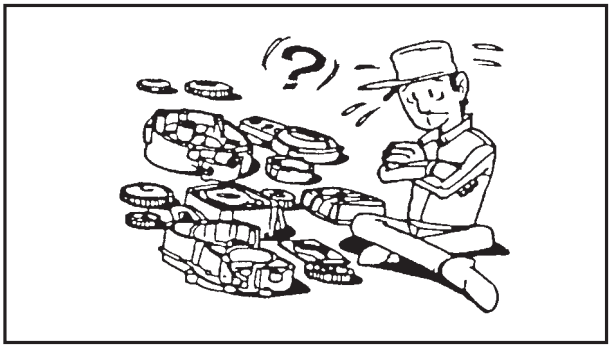


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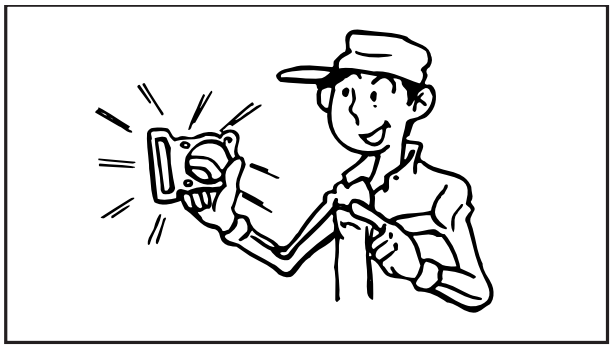
IMPORTANT INFORMATION

PREPARATION FOR REMOVAL AND DISASSEMBLY

1. Before removal and disassembly, remove all dirt, mud, dust and foreign material.



2. Use only the proper tools and cleaning equipment.
 Refer to the “SPECIAL TOOLS”.
3. When disassembling, always keep mated parts together. This includes gears, cylinders, pistons and other parts that have been “mated” through normal wear. Mated parts must always be reused or replaced as an assembly.
4. During disassembly, clean all of the parts and place them in trays in the order of disassembly. This will speed up assembly and allow for the correct installation of all parts.
5. Keep all parts away from any source of fire.



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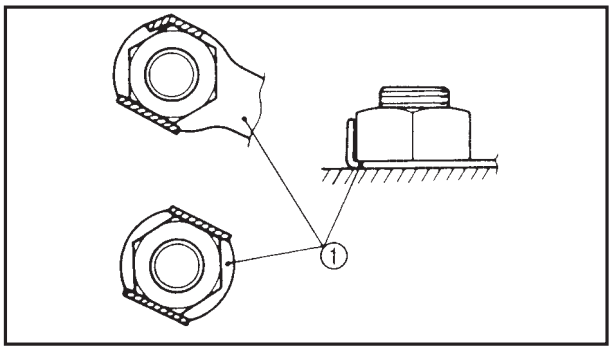
REPLACEMENT PARTS

Use only genuine Yamaha parts for all replacements. Use oil and grease recommended by Yamaha for all lubrication jobs. Other brands may be similar in function and appearance, but inferior in quality.

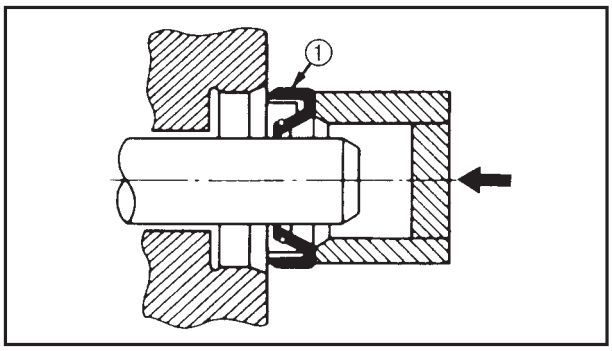
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GASKETS, OIL SEALS AND O-RINGS

1. When overhauling the engine, replace all gaskets, seals and O-rings. All gasket surfaces, oil seal lips and O-rings must be cleaned.
2. During reassembly, properly oil all mating parts and bearings and lubricate the oil seal lips with grease.

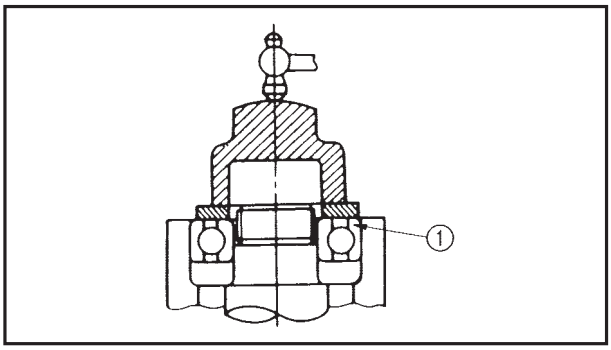


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LOCK WASHERS/PLATES AND COTTER PINS
After removal, replace all lock washers/plates ① and cotter pins. After the bolt or nut has been tightened to specification, bend the lock tabs along a flat of the bolt or nut.



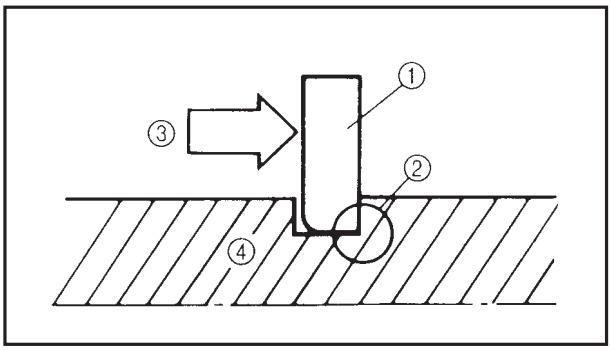
EAS00024
BEARINGS AND OIL SEALS
Install bearings and oil seals so that the manufacturer's marks or numbers are visible. When installing oil seals, lubricate the oil seal lips with a light coat of lithium-soap-based grease. Oil bearings liberally when installing, if appropriate.

① Oil seal



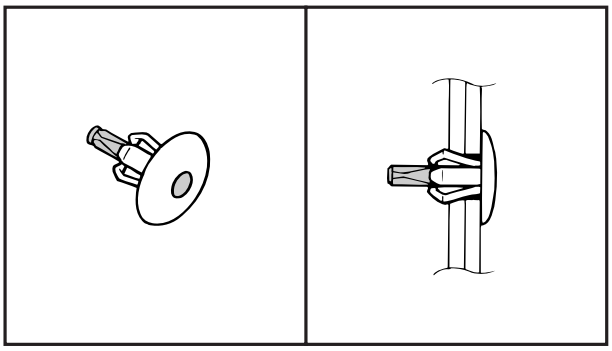
CAUTION:
Do not spin the bearing with compressed air because this will damage the bearing surfaces.

① Bearing



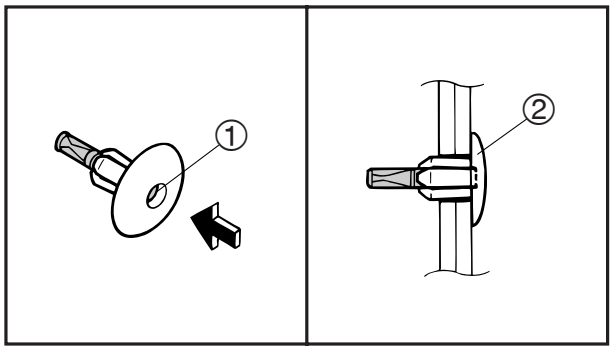
EAS00025
CIRCLIPS
Before reassembly, check all circlips carefully and replace damaged or distorted circlips. Always replace piston pin clips after one use. When installing a circlip ①, make sure the sharp-edged corner ② is positioned opposite the thrust ③ that the circlip receives.

④ Shaft



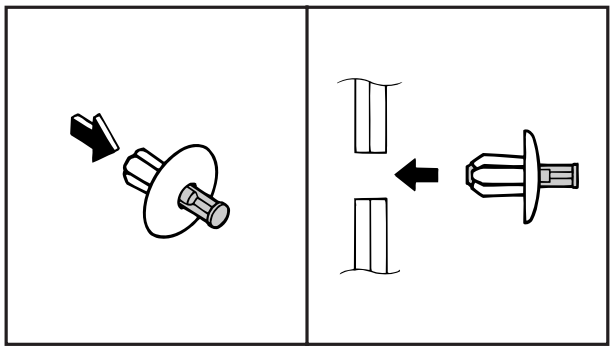
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Notes 3 on equipment preparation
Push Rivet (Push type)
Assembly status of the Push Rivet (Push type)



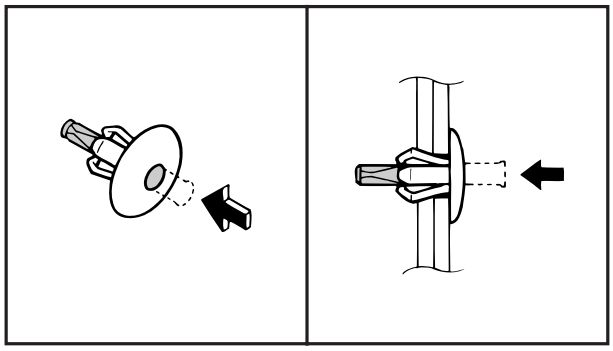
Dissembling

1. Press Center Pin ① inward to release the Lock.
2. Remove the Push Rivet main body ②.



Assembling

1. Restore the Center Pin, replace the Push Rivet main body.



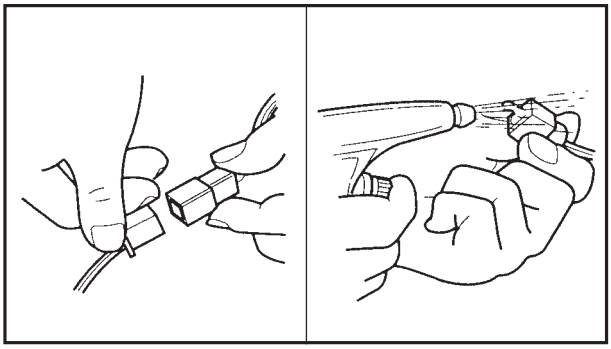
2. Push in the Center Pin until leveling off with the surface position of the Push Rivet main body.

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CHECKING THE CONNECTIONS

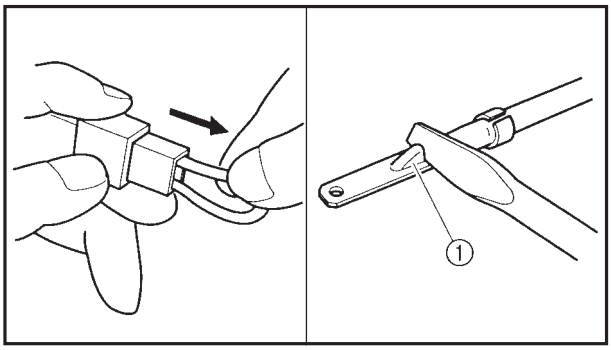
Check the leads, couplers, and connectors for stains, rust, moisture, etc.

1. Disconnect:
 - lead
 - coupler
 - connector



2. Check:
 - lead
 - coupler
 - connector

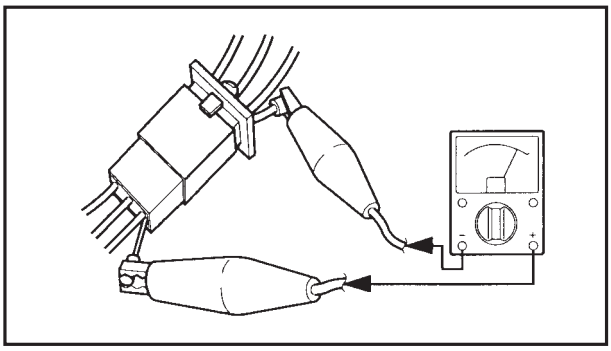
 Moisture → Dry with an air blower.
 Rust/stains → Connect and disconnect several times.



3. Check:
 - all connections

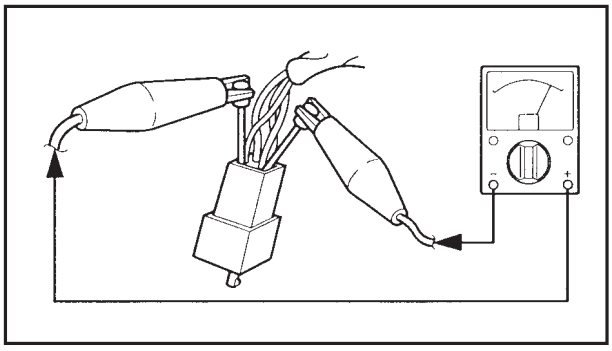
 Loose connection → Connect properly.

NOTE:
If the pin ① on the terminal is flattened, bend it up.



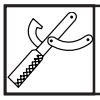
4. Connect:
 - lead
 - coupler
 - connector

NOTE:
Make sure all connections are tight.



5. Check:
 - continuity

 (with the pocket tester)



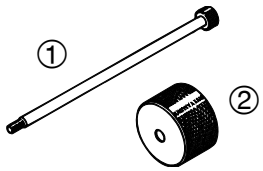
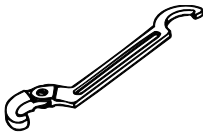
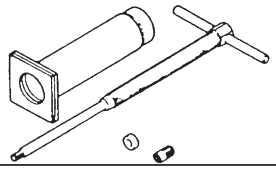
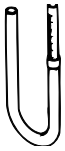
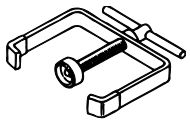
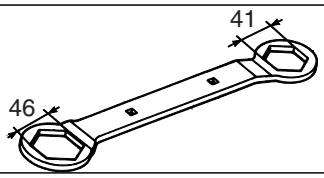
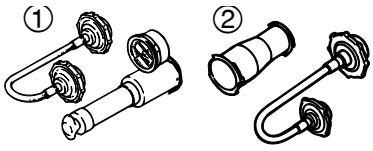
Pocket tester
90890-03132 (YU-03112-C)

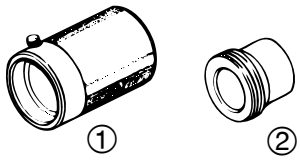
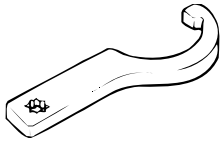
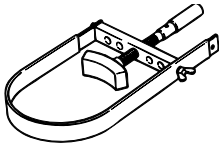
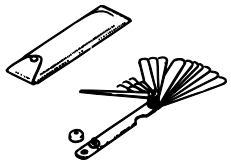
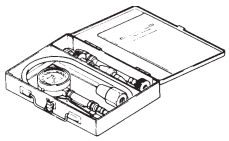
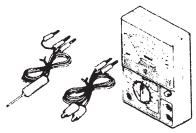
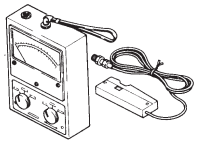
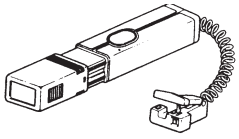
NOTE:
- If there is no continuity, clean the terminals.
- When checking the wire harness, perform steps (1) to (3).
- As a quick remedy, use a contact revitalizer available at most part stores.

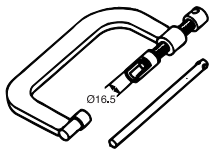
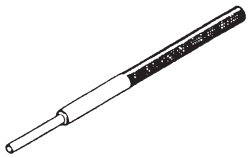
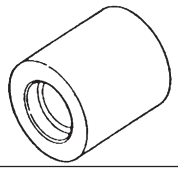
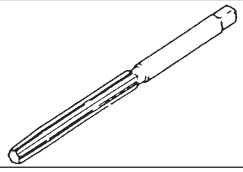
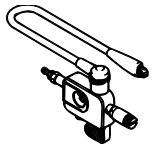
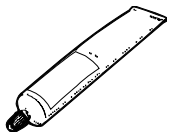
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SPECIAL TOOLS

The following special tools are necessary for complete and accurate tune-up and assembly. Use only the appropriate special tools as this will help prevent damage caused by the use of inappropriate tools or improvised techniques. Special tools, part numbers or both may differ depending on the country.
When placing an order, refer to the list provided below to avoid any mistakes.

Tool NO.	Tool name / Function	Illustration
90890-01085 YU-01083-2 90890-01084 YU-01083-3	Slide hammer bolt (8mm) ① Weight ② These tools are needed to remove the camshaft.	
90890-01235 YU-01235	Rotor holding tool This tool is used to remove the flywheel magneto.	
90890-01268 YU-01268	Ring nut wrench This tool is used to loosen and tighten the exhaust and steering ring nut.	
90890-01304 YU-01304	Piston pin puller set This tool is used to remove the piston pin.	
90890-01312 YM-01312-A	Fuel level gauge This gauge is used to measure the fuel level in the float chamber.	
90890-01337 YM-33285 YM-33285-6	Clutch spring holder These tool are used for removing the nut with holding the compression spring.	
90890-01348 YM-01348	Lock nut wrench This tool is used when removing or installing the secondary sheave nut.	
90890-01325 YU-24460-01 90890-01352 YU-33984	Radiator cap tester① Radiator cap tester adapter② This tester and its adapter are needed for checking the cooling system.	

Tool NO.	Tool name / Function	Illustration
90890-01367 YM-A9409-7 90890-01400 YM-A9409-3	Fork seal driver weight① Fork seal driver attachment(Ø30mm)② This tool is used when installing the fork seal.	
90890-01384 YM-33299	Oil seal guide This tool is used for protecting the oil seal lip when installing the secondary sliding sheave.	
90890-01403 YU-A9472	Steering nut wrench This tool is used to loosen and tighten the steering ring nut.	
90890-01701 YS-01880-A	Sheave holder This tool is used for holding the secondary sheave.	
90890-03079 YM-34483	Thickness gauge This tool is used to measure the valve cleanance.	
90890-03081 YU-33223	Compression gauge These tool are used to measure the engine compression.	
90890-03132 YU-03112-C	Pocket tester This instrument is invaluable for checking the electrical system.	
90890-03113 YU-08036-C	Engine tachometer This tool is needed for detecting engine rpm.	
90890-03141 YU-03141	Timing light This tool is needed for detecting ignition timing.	

Tool NO.	Tool name / Function	Illustration
90890-04109 YM-04109 90890-04148 YM-04148	Valve spring compressor Compressor adapter(Ø16.5mm) These tools are used when removing or installing the valve and the valve spring.	
90890-04111 YM-04111	Valve guide remover (4.0 mm) This tool is used to remove or install the valve guides.	
90890-04112 YM-04112	Valve guide installer (4.0 mm) This tool is used to install the valve guides.	
90890-04113 YM-04113	Valve guide remover (4.0 mm) This tool is used to rebore the new valve guides.	
90890-06754 YM-34487	Ignition checker This instrument is necessary for checking the ignition system components.	
90890-85505 ACC-11001-05-01	Yamaha bond NO.1215 This sealant (bond) is used on crankcase mating surfaces, etc.	

CHAPTER 2
SPECIFICATIONS

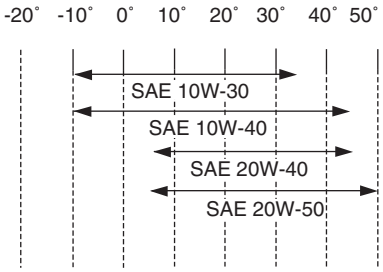
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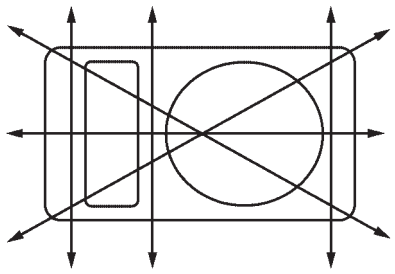
SPECIFICATIONS

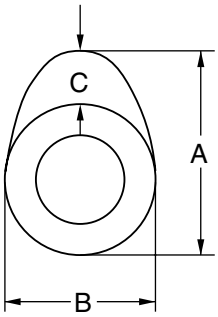
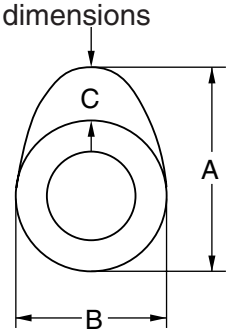
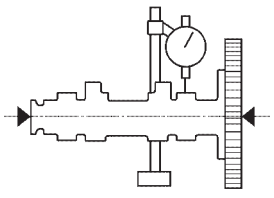
GENERAL SPECIFICATIONS

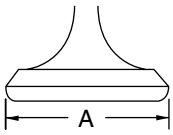
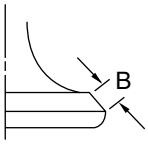
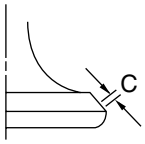
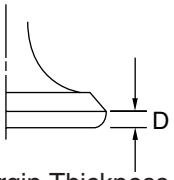
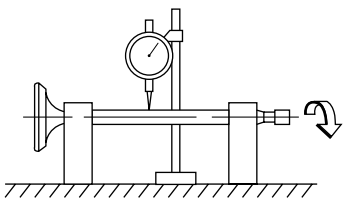
Item	Standard	Limit
Model code	3D11 (for USA) 3D12 (for CAN)	… …
Dimensions		
Overall length	1665 mm(65.6in)	…
Overall width	630 mm(24.8in)	…
Overall height	1005 mm(39.6in)	…
Seat height	715 mm(28.2in)	…
Wheelbase	1160 mm(45.7in)	…
Ground clearance	85 mm(3.4in)	…
Minimum turning radius	1800mm(70.9in)	…
Weight		
Wet (without oil and a full fuel tank)	81 kg(179lb)	…
Dry (without oil and fuel)	76kg(168lb)	…
Maximun load (total of cargo, rider, passenger, and accessories)	158kg(348lb)	…

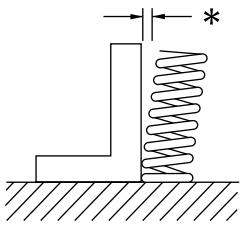
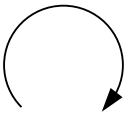
ENGINE SPECIFICATIONS

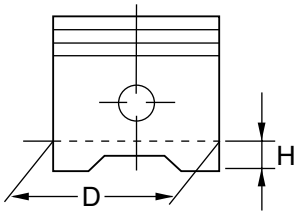
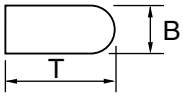
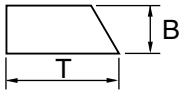
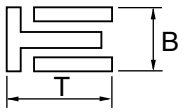
Item	Standard	Limit
Engine		
Engine type	Liquid-cooled, 4-stroke, SOHC	…
Displacement	0.049L(49cm^3)	…
Cylinder arrangement	Forward inclined single cylinder	…
Bore × stroke	38.0 × 43.5 mm	…
Compression ratio	12:1	…
Engine idle speed	2000~2400 r/min	…
Vacuum pressure at engine idle speed(AI OFF)	34.7 kpa (260 mmHg)	…
Standard compression pressure (at sea level)	1450 kPa (14.5kgf/cm^2) at 700 r/min	…
Fuel		
Recommended fuel	Unleaded gasoline	…
Fuel tank capacity		
Total (including reserve)	4.5L (0.98 Imp gal, 1.18 US gal)	…
Engine oil		
Lubrication system	Wet sump	…
Recommended oil		
	SAE10W40 Yamaha 4-cycle oil EFERO X,Z,BX	…
Quantity		
Periodic oil change	0.73~0.83 L (0.67~0.76 Imp qt, 0.80~0.90 US qt)	…
Total amount	0.8~0.9L (0.74~0.83 Imp qt, 0.87~0.98 US qt)	…
Final gear oil		
Recommended oil	SAE10W30 hypoid gear oil	…
Periodic oil change	0.09~0.11L (0.08~0.10 Imp qt, 0.10~0.12 US qt)	…
Total amount	0.11~0.13L (0.10~0.12 Imp qt, 0.12~0.14 US qt)	…

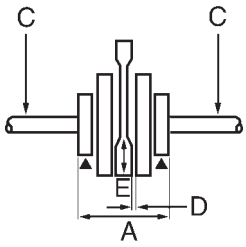
Item	Standard	Limit
Oil filter		
Oil filter type	Wire mesh	…
Oil pump		
Oil pump type	Trochoid	…
Inner rotor to outer rotor tip clearance	0.15 mm or less	0.23mm
Outer rotor to pump housing clearance	0.13-0.18 mm	0.25mm
Oil pump housing to inner rotor and outer rotor clearance	0.07-0.12 mm	0.19mm
Cooling system		
Radiator capacity	0.26L	…
Radiator cap opening pressure	93.3~122.7 kpa (0.95~1.25kgf/cm^2, 13.53~17.79 psi)	…
Valve relief pressure	1.1kpa (0.01kgf/cm^2, 0.16 psi)	…
Radiator core		
Width	133.3mm	…
Height	87mm	…
Depth	16mm	…
Coolant reservoir		
Capacity	0.26L	…
<From low to full lever>	0.15L	…
Water pump		
Water pump type	Single suction centrifugal pump	…
Max. impeller shaft tilt	…	0.15mm
Starting system type	Electric and kick starter	…
Spark plug		
Model (manufacturer) × quantity	CR7E (NGK) × 1	…
Spark plug gap	0.7~0.8mm	…
Cylinder head		
Volume	3.1~3.5cm^3	…
Max. warpage	…	0.03 mm
 1I110304		

Item	Standard	Limit
Camshaft		
Drive system	Chain drive (left)	…
Intake camshaft lobe dimensions		
		
Measurement A	30.158~30.258 mm	30.058 mm
Measurement B	25.082~25.182 mm	24.982 mm
Measurement C	5.2077mm	…
Exhaust camshaft lobe dimensions		
		
Measurement A	30.158~30.258 mm	30.058 mm
Measurement B	25.020~25.120 mm	24.920 mm
Measurement C	5.2077mm	…
Max. camshaft runout	…	0.03 mm
		

Item	Standard	Limit	
Timing chain			
Model/number of links	Morse 92RH2005 / 82	…	
Tensioning system	Automatic	…	
Valve, valve seats, valve guides			
Valve clearance (cold)			
Intake	0.10~0.16 mm	…	
Exhaust	0.18~0.24 mm	…	
Valve dimensions			
 Head Diameter	 Face Width	 Seat Width	 Margin Thickness
Valve head diameter A			
Intake	15.4~15.6 mm	…	
Exhaust	16.4~16.6 mm	…	
Valve face width B			
Intake	1.48~2.19 mm	…	
Exhaust	1.48~2.19 mm	…	
Valve seat width C			
Intake	0.9~1.1 mm	1.6mm	
Exhaust	0.9~1.1 mm	1.6mm	
Valve margin thickness D			
Intake	0.7 mm	…	
Exhaust	0.7 mm	…	
Valve stem diameter			
Intake	3.975~3.990 mm	3.945 mm	
Exhaust	3.960~3.975 mm	3.930 mm	
Valve guide inside diameter			
Intake	4.000~4.012 mm	4.050 mm	
Exhaust	4.000~4.012 mm	4.050 mm	
Valve stem to valve guide clearance			
Intake	0.010~0.037 mm	0.080 mm	
Exhaust	0.025~0.052 mm	0.100 mm	
Valve stem runout	…	0.010 mm	
			
Valve seat width			
Intake	0.9~1.1 mm	1.6mm	
Exhaust	0.9~1.1 mm	1.6mm	

Item	Standard	Limit
Valve springs		
Free length		
Intake	39.35 mm	37.38 mm
Exhaust	41.57 mm	39.49 mm
Installed length (valve closed)		
Intake	28.0mm	…
Exhaust	30.0mm	…
Compressed spring force (installed)		
Intake	91.1~104.9N(9.3~10.7kg)	…
Exhaust	107.9~124.1N (11.0~12.7kg)	…
Spring tilt 		
Intake	…	2.5 °/1.7 mm
Exhaust	…	2.5 °/1.8 mm
Winding direction (top view)		
Intake	Clockwise	…
Exhaust	Clockwise	…
		
Valve seat reformed	Yes	…
Cylinder		
Cylinder arrangement	Forward inclined single cylinder	…
Bore × stroke	38.0 × 43.5 mm	…
Compression ratio	12:1	…
Bore	38.000~38.010 mm	…
Max. taper	…	0.05 mm
Max. out-of-round	…	0.010 mm

Item	Standard	Limit
Piston		
Piston-to-cylinder clearance	0.010~0.035 mm	0.150mm
Diameter D	37.975~37.990 mm	…
		
Height H	5.0 mm	…
Piston pin bore (in the piston)		
Diameter	10.002~10.013 mm	10.043 mm
Offset	0.35~0.65mm	…
Offset direction	Intake side	…
Piston pin		
Outside diameter	9.996~10.000 mm	9.976 mm
Piston rings		
Top ring		
		
Ring type	Barrel	…
Dimensions (B × T)	0.8 × 1.65mm	…
End gap (installed)	0.05~0.15 mm	0.40mm
Ring side clearance	0.02~0.08 mm	0.13 mm
2nd ring		
		
Ring type	Taper	…
Dimensions (B × T)	0.8 × 1.5mm	…
End gap (installed)	0.05~0.17 mm	0.52mm
Ring side clearance	0.02~0.06 mm	0.12mm
Oil ring		
		
Dimensions (B × T)	1.5 × 1.6 mm	…
End gap (installed)	0.2~0.7 mm	…
Ring side clearance	0.03~0.15 mm	…

Item	Standard	Limit
Rocker arm/rocker arm shaft		
Rocker arm inside diameter	10.000~10.015mm	…
Rocker arm shaft outside diameter	9.981~9.991 mm	…
Arm-to-shaft clearance	0.009~0.034 mm	…
Connecting rod		
Connecting rod length	79.95~80.05 mm	…
Small end inside diameter	10.015~10.028mm	…
Crankshaft		
		
Width A	42.45~42.50 mm	…
Max. runout C	…	0.03mm
Big end side clearance D	0.15~0.45 mm	1.00mm
Big end radial clearance E	0~0.010mm	…

Item	Standard	Limit
Clutch		
Clutch type	Automatic centrifugal	…
Clutch shoe thickness	3.7 mm	2.0mm
Clutch shoe spring free length	30.1±0.4mm	…
Clutch housing inside diameter	107 mm	…
Compression spring free length	76.4 mm	…
Weight outside diameter	15.0 mm	14.5 mm
Clutch-in revolution	3450~3850 r/min	…
Clutch-stall revolution	4350~5350 r/min	…
V-belt		
V-belt width	16.8 mm	15.8mm
Transmission		
Transmission type	V-belt automatic	…
Primary reduction system	Helical gear	…
Primary reduction ratio	48/13 (3.692)	…
Secondary reduction system	Spur gear	…
Secondary reduction ratio	43/12 (3.583)	…
Single speed automatic	2.805~0.863:1	…
Max. main axle runout	…	0.04 mm
Max. drive axle runout	…	0.04 mm
Air filter type	Oil coated paper element	…
Carburetor		
Model (manufacturer) × quantity	NCV18 (KEIHIN) × 1	…
ID mark	3D11 00	…
Venturi tube bore(primary)	Ø7.7	…
Venturi tube bore(secondary)	Ø16.6	…
Main jet	#82	…
Main air jet	#80	…
Jet needle	N425-FBC00	…
Neddle jet	N426-36628	…
Slow air jet	#82	…
Pilot outlet	Ø0.9	…
Slow jet	#35/35	…
Bypass 1	Ø0.7	…
Bypass 2	Ø0.7	…
Bypass 3	Ø0.7	…
Valve seat size	Ø1.6	…
Starter jet	#38	…
Starter air jet	Ø1.5	…
Throttle valve size	N503-69E00	…
Fuel level (using fuel level gauge)	6.6~7.6mm	…
Engine idle speed	2000~2400 r/min	…
CO% (air induction system ON)	Less than 3.5%	…
CO% (air induction system OFF)	5.5~6.5 %	…
Oil temperature (°C)	55~65 °C	…

CHASSIS SPECIFICATIONS

Item	Standard	Limit
Frame		
Frame type	Steel tube underbone	…
Caster angle	24 °	…
Trail	70 mm	…
Front wheel		
Wheel type	Cast wheel	…
Rim		
Size	J10 × MT2.15	…
Material	Aluminum	…
Wheel travel	59mm	…
Wheel runout		
Max. radial wheel runout	…	1.0 mm
Max. lateral wheel runout	…	1.0 mm
Rear wheel		
Wheel type	Cast wheel	…
Rim		
Size	J10 × MT2.15	…
Material	Aluminum	…
Wheel travel	54mm	…
Wheel runout		
Max. radial wheel runout	…	1.0 mm
Max. lateral wheel runout	…	1.0 mm
Front tire		
Tire type	Tubeless	…
Size	90/90-10 50J	…
Model (manufacturer)	K348A (KENDA)	…
Tire pressure (cold)		
0~55 kg	150kpa (1.5 kgf/cm², 22 psi)	…
55~158 kg	150kpa (1.5 kgf/cm², 22 psi)	…
Min. tire tread depth	…	0.8mm
Rear tire		
Tire type	Tubeless	…
Size	90/90-10 50J	…
Model (manufacturer)	K348A (KENDA)	…
Tire pressure (cold)		
0~55 kg	175kpa (1.75 kgf/cm², 25 psi)	…
55~158 kg	175kpa (1.75 kgf/cm², 25 psi)	…
Min. tire tread depth	…	0.8mm

Item	Standard	Limit
Front brake		
Brake type	Drum brake	…
Operation	Right-hand operation	…
Brake lever free play (at lever end)	10~20mm	…
Brake drum inside diameter	110 mm	110.5mm
Lining thickness	4.0mm	2.0mm
Rear brake		
Brake type	Drum brake	…
Operation	Left-hand operation	…
Brake lever free play (at lever end)	10~20mm	…
Brake drum inside diameter	110 mm	110.5mm
Lining thickness	4.0mm	2.0mm
Front suspension		
Suspension type	Telescopic	…
Front fork type	Coil spring/grease damper	…
Front fork travel	65 mm	…
Spring		
Free length	120 mm	117.6mm
Installed length	110mm	…
Spring rate (K1)	9.46N/mm (0.96 kgf/mm)	…
Spring stroke (K1)	0~65mm	…
Optional spring available	No	…
Inner tube outer diameter	26 mm	…
Inner tube bending limit	…	0.2 mm
Steering system		
Steering bearing type	Angular bearing	…
Lock to lock angle (left)	45°	…
Lock to lock angle (Right)	45°	…
Rear suspension		
Suspension type	Unit swing	…
Rear shock absorber assembly type	Coil spring/oil damper	…
Rear shock absorber assembly travel	55mm	…
Spring		
Free length	192.5mm	…
Installed length	182.5mm	…
Spring rate (K1)	24.82N/mm (2.53kgf/mm)	…
Spring rate (K2)	39.27N/mm (4.00kgf/mm)	…
Spring rate (K3)	60.50N/mm (6.17kgf/mm)	…
Spring stroke (K1)	0~25mm	…
Spring stroke (K2)	25~43mm	…
Spring stroke (K3)	43~55mm	…
Optional spring available	No	…

ELECTRICAL SPECIFICATIONS

Item	Standard	Limit
System voltage	12V	…
Ignition system		
Ignition system type	C.D.I.	…
Ignition timing	13 ° B.T.D.C. at 2000~2400 r/min	…
Advancer type	Digital	…
Pickup coil resistance /color	248~372 Ω / WR-WL	…
C.D.I. unit model (manufacturer)	5ST (T-MORIC)	…
Ignition coil		
Model (manufacturer)	X7A (T-MORIC)	…
Minimum ignition spark gap	6mm	…
Primary coil resistance	0.168~0.252 Ω at 20 ° C	…
Secondary coil resistance	2.4~3.6 kΩ at 20 ° C	…
Spark plug cap		
Material	Resin	…
Resistance	4~6 kΩ	…
Charging system		
System type	AC magneto	…
Model (manufacturer)	1P41 (T-MORIC)	…
Nominal output	14V 120W / 5000 r/min	…
Stator coil resistance /color	0.288~0.432 Ω/Ground-W	…
Lighting coil resistance /color	0.256~0.384 Ω/Ground-Y/R	…
Voltage regulator		
Regulator type	Semiconductor, short circuit	…
Model (manufacturer)	SH656-12 (SHIN DEN GEN)	…
No load regulated voltage(DC)	14.1~14.9 V	…
Rectifier		
Model (manufacturer)	SH656-12 (SHIN DEN GEN)	…
Rectifier capacity(DC)	8A	…
Withstand voltage	200V	…
Battery		
Battery type (manufacturer)	GTX5L-BS (GS)	…
Battery voltage capacity	12V 4AH	…
Specific gravity	1.330	…
Ten hour rate amperage	4AH	…
Headlight type	Halogen bulb	…
Indicator light (voltage/wattage×quantity)		
Turn signal indicator light	14 V 3.0 W × 2	…
High beam indicator light	12 V 1.7W × 1	…
Water temperature indicator light	14 V 3.0W × 1	…

Item	Standard	Limit
Bulbs (voltage/wattage × quantity)		
Headlight	12 V 35W/35W × 1	…
Tail/brake light	12 V 5W/21 W × 1	…
Front turn signal light	12 V 10 W × 2	…
Rear turn signal light	12 V 10 W × 2	…
Speedometer lighting	12 V 1.7 W × 2	…
Electric starting system		
System type	Constant mesh	…
Starter motor		
Model (manufacturer)	5STF (T-MORIC)	…
Suction voltage	12V	…
Power output	0.25 kW	…
Brushes		
Overall length	7.0 mm	3.5mm
Quantity	2	…
Spring force	3.92~5.88 N	…
Commutator diameter	17.6 mm	16.6mm
Commutator resistance	0.0378~0.0462 Ω at 20 ° C	…
Mica undercut (depth)	1.35 mm	…
Starter relay		
Model (manufacturer)	5WC 00 (OMRON)	…
Amperage	50 A	…
Coil resistance	90-110 Ω	…
Suction voltage	More than DC10V	…
Horn		
Horn type	Plane	…
Model (manufacturer)	AH-368 (SAKURA)	…
Max. amperage	1.5 A	…
Performance	98~108db/2m	…
Coil resistance	4.05~4.55Ω	…
Turn signal relay		
Relay type	Full transistor	…
Model (manufacturer)	5CA9 (TA YOUNG)	…
Self-cancelling device built-in	NO	…
Turn signal blinking frequency	75~95 cycles/min	…
Wattage	10 W × 2 + 1.7 W+ AP	…
Fuel sender		
Model (manufacturer)	5ST1 (CHAO LONG)	…
Sender unit resistance-full	6~8 Ω	…
Sender unit resistance-empty	93.5~96.5 Ω	…
Head light relay		
Model (manufacturer)	5EB 10 (OMRON)	…
Coil resistance	90~110 Ω	…
Diode	YES	…

Item	Standard	Limit
Throttle position sensor		
Output voltage (throttle opens)	2.8~3.4V	…
Output voltage (throttle closes)	0.625~0.775V	…
Radiator fan		
Model (manufacturer)	5ST-00 (LUNTAI)	…
Running rpm	10000 r/min	…
Thermostat switch		
Model (manufacturer)	5ST (NIPPON THERMOSTAT)	…
Thermo unit		
Model (manufacturer)	5JJ (NIPPON THERMOSTAT)	…
Coil resistance at 80 °C	3.413~4.007 kΩ	…
Coil resistance at 100 °C	1.645~1.855 kΩ	…
Fuse (amperage × quantity)		
Main fuse	7.5A×1	…

EB201000
CONVERSION TABLE

All specification data in this manual are listed in SI and METRIC UNITS.
Use this table to convert METRIC unit data to IMPERIAL unit data.

Ex.

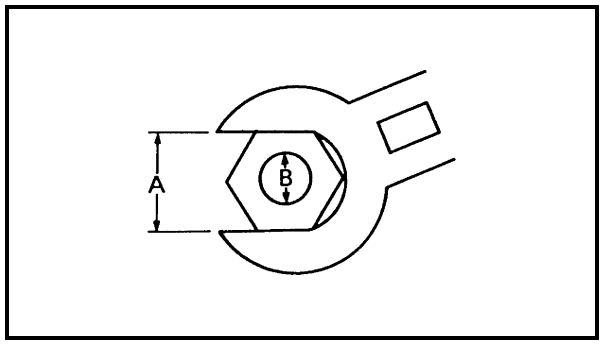
METRIC	MULTIPLIER	IMPERIAL
** mm	0.03937	** in
2 mm	0.03937	0.08 in

CONVERSION TABLE

METRIC TO IMPERIAL			
	Metric unit	Multiplier	Imperial unit
Tightening torque	m·kg	7.233	ft·lb
	m·kg	86.794	in·lb
	cm·kg	0.0723	ft·lb
	cm·kg	0.8679	in·lb
Weight	kg	2.205	lb
	g	0.03527	oz
Speed	km/hr	0.6214	mph
Distance	km	0.6214	mi
	m	3.281	ft
	m	1.094	yd
	cm	0.3937	in
	mm	0.03937	in
Volume/ Capacity	cc (cm^3)	0.03527	oz (IMP liq.)
	cc (cm^3)	0.06102	cu-in
	lt (liter)	0.8799	qt (IMP liq.)
	lt (liter)	0.2199	gal (IMP liq.)
Misc.	kg/mm	55.997	lb/in
	kg/cm^2	14.2234	psi (lb/in^2)
	Centigrade (°C)	9/5+32	Fahrenheit (°F)

EAS00030
GENERAL TIGHTENING TORQUE SPECIFICATIONS

This chart specifies tightening torques for standard fasteners with a standard ISO thread pitch. Tightening torque specifications for special components or assemblies are provided for each chapter of this manual. To avoid warpage, tighten multi-fastener assemblies in a crisscross pattern and progressive stages until the specified tightening torque is reached. Unless otherwise specified, tightening torque specifications require clean, dry threads. Components should be at room temperature.



A: Width across flats
B: Thread diameter

A (nut)	B (bolt)	General tightening torques		
		Nm	m•kg	ft•lb
10 mm	6 mm	6	0.6	4.3
12 mm	8 mm	15	1.5	11
14 mm	10 mm	30	3.0	22
17 mm	12 mm	55	5.5	40
19 mm	14 mm	85	8.5	61
22 mm	16 mm	130	13.0	94

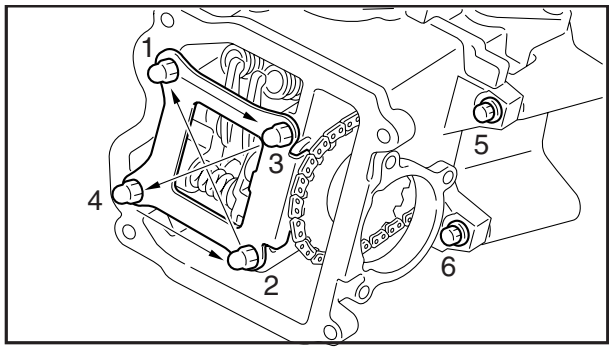
TIGHTENING TORQUES

ENGINE

Part to be tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m•kg	ft•lb	
Cylinder head and cylinder	Nut	M6	4	10	1.0	7.2	④
Spark plug	-	M10	1	12.5	1.25	9.0	
Cylinder head(timing chain side)	Bolt	M6	2	10	1.0	7.2	
Exhaust pipe stud bolt	-	M8	2	12.5	1.25	9.0	
Cylinder head cover	Nut	M6	4	10	1.0	7.2	
Oil check bolt	-	M6	1	7	0.7	5.1	
Water pump housing cover	Bolt	M6	3	10	1.0	7.2	
Water pump assembly	Bolt	M6	3	10	1.0	7.2	
Guide stopper2	Bolt	M6	1	7	0.7	5.1	
Thermostat housing air bleed bolt	-	M6	1	10	1.0	7.2	
Camshaft sprocket	Bolt	M8	1	30	3.0	21.7	
Timing chain tensioner (body)	Bolt	M6	2	9	0.9	6.5	
Timing chain tensioner (plug)	plug	M8	1	8	0.8	5.8	
Thermostat housing	Bolt	M6	2	10	1.0	7.2	
Fan case	Bolt	M6	4	10	1.0	7.2	
Fan	Bolt	M6	3	9	0.9	6.5	
Oil pump assembly	Bolt	M5	2	4	0.4	2.9	
Radiator drain bolt	-	M12	1	2	0.2	1.5	
Manifold	Bolt	M6	2	10	1.0	7.2	
Air filter assembly	Bolt	M6	2	10	1.0	7.2	
Engine oil drain plug	-	M35	1	32	3.2	23.1	
Air cut-off valve	Bolt	M6	1	10	1.0	7.2	
Muffler	Bolt	M8	2	31	3.1	22.4	
Oil guide	Nult	M6	2	10	1.0	7.2	
Muffler	Nut	M8	2	13	1.3	9.4	
Protector	Screw	M6	2	9	0.9	6.5	
Crankcase(left and right)	Bolt	M6	8	10	1.0	7.2	
Transmission cover	Bolt	M6	8	13	1.3	9.4	
Drain bolt(transmission oil)	Bolt	M6	8	13	1.3	9.4	
Cover1(starter clutch)	Bolt	M6	7	10	1.0	7.2	
Crankcase cover(left)	Bolt	M6	6	10	1.0	7.2	
Hold lead plate bolt	-	M6	1	10	1.0	7.2	
Drain bolt(engine oil)	-	M8	1	23	2.3	16.6	
Rear wheel lock nut	-	M8	1	15	1.5	10.9	Left-hand thread
Drain bolt(transmission oil fill bolt)	-	M8	1	23	2.3	16.6	
AI filter	Bolt	M6	1	10	1.0	7.2	
Rear wheel lock cover	Bolt	M6	4	10	1.0	7.2	
Plate	Bolt	M6	7	7	0.7	5.1	
Kickstarter	Bolt	M6	1	12	1.2	8.7	
Starter clutch	Nut	M22	1	90	9.0	65.1	Left-hand thread

Part to be tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m•kg	ft•lb	
Clutch housing	Nut	M10	1	40	4.0	28.9	
Ignition coil	Bolt	M5	1	8	0.8	5.8	
Thermo unit	-	PT1/8	1	8	0.8	5.8	
Primary fixed sheave	Nut	M10	1	30	3.0	21.7	
Starter motor assembly	Bolt	M6	2	13	1.3	9.4	
AC magneto rotor	Nut	M12	1	43	4.3	31.1	
Stator coil	Bolt	M5	3	4	0.4	2.9	LT
Pickup coil	Screw	M6	2	7	0.7	5.1	

Cylinder head tightening sequence

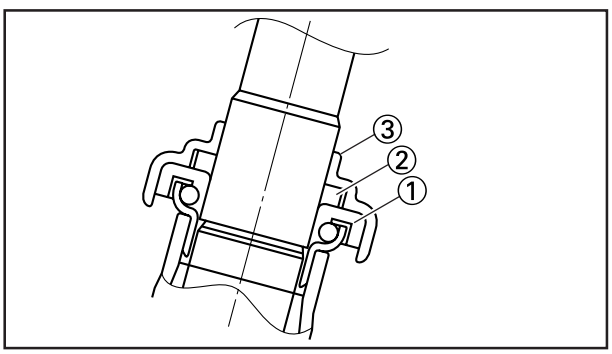


CHASSIS

Part to be tightened	Thread size	Tightening torque			Remarks
		Nm	m•kg	ft•lb	
Frame and engine bracket 3	M10	46	4.6	33.1	
Engine bracket 3 and engine	M10	58	5.8	42.0	
Handlebar and steering shaft	M10	60	6.0	43.4	
Front fork and lower bracket	M10	30	3.0	21.7	
Seat lock assembly	M6	12	1.2	8.7	
Rear carrier(front)	M6	10	1.0	7.2	
Rear carrier(rear)	M8	23	2.3	16.6	
Steering shaft and upper bearing inner race	BC	7	0.7	5.1	See"NOTE"
Steering shaft and ring nut	BC1	30	3.0	21.7	See"NOTE"
Trunk	M6	12	1.2	8.7	
Footrest board	M6	4	0.4	2.9	
Fuel sender	M5	3	0.3	2.2	
Resin part and resin cover	About M5	1.5	0.15	1.1	
Seat lock adjuster	M6	2	0.2	1.5	
Main switch and frame	M6	7	0.7	5.1	
Front brake camshaft lever	M6	8	0.8	5.8	
Front wheel shaft	M10	48	4.8	34.7	
Rear wheel shaft	M14	104	10.4	75.2	
Rear brake camshaft lever	M6	7	0.7	5.1	
Rear brake pin pivot	M8	16	1.6	11.6	
Speedometer cable	M12	3	0.3	2.2	
Rear shock absorber and frame	M10	30	3.0	21.7	
Rear shock absorber and engine	M8	16	1.6	11.6	

NOTE :

1. First, tighten the upper bearing inner race approximately 7Nm(0.7m•kg, 5.1ft•lb) by using the torque wrench and check turn steering shaft smoothly.
2. Second, hold the upper bearing inner race and tighten the ring nut 30Nm(3.0m•kg, 21.7ft•lb) by using the torque wrench.
3. Final, installing the ball race cover.



① Upper bearing inner race
② Ring nut
③ Ball race cover

EAS00031

LUBRICATION POINTS AND LUBRICANT TYPES

ENGINE

Lubrication Point	Lubricant
Oil seal lips	LS
O-rings (Except V-belt drive unit)	LS
Cylinder head tightening nut mounting surface	4
Cylinder head stud bolt thread	4
Cylinder head gasket dowel pin	4
Crankshaft pin outside surface	4
Connecting rod	4
Piston outside and ring groove	4
Piston pin outside surface	4
surface and bolt thread	4
Crankshaft journal	4
Piston (balancer) outside surface	4
Piston pin (balancer) outside surface	4
Camshaft lobe	M
Camshaft profile journal	M
Valve stems (intake and exhaust)	M
Valve stem seals(intake and exhaust)	M
Valve pads(intake and exhaust)	M
Valve stem ends (intake and exhaust)	4
Oil pump assembly inside surface	4
Oil pipe union bolt thread and surface	4
Starter clutch pin and weight	M
Idle gear 1 thrust surface	4
Idle gear 2	4
Main and drive axle serration (sprocket)	G
Drive axle taper rollor bearing	G
Transmission bearing	G

LUBRICATION POINTS AND LUBRICANT TYPES

Lubrication Point	Lubricant
Secondary fixed sheave inner surface	BEL-RAY asembly lube®
Secondary sliding sheave torque cam ditch	BEL-RAY asembly lube®
Crankcase mating surfaces	Sealant

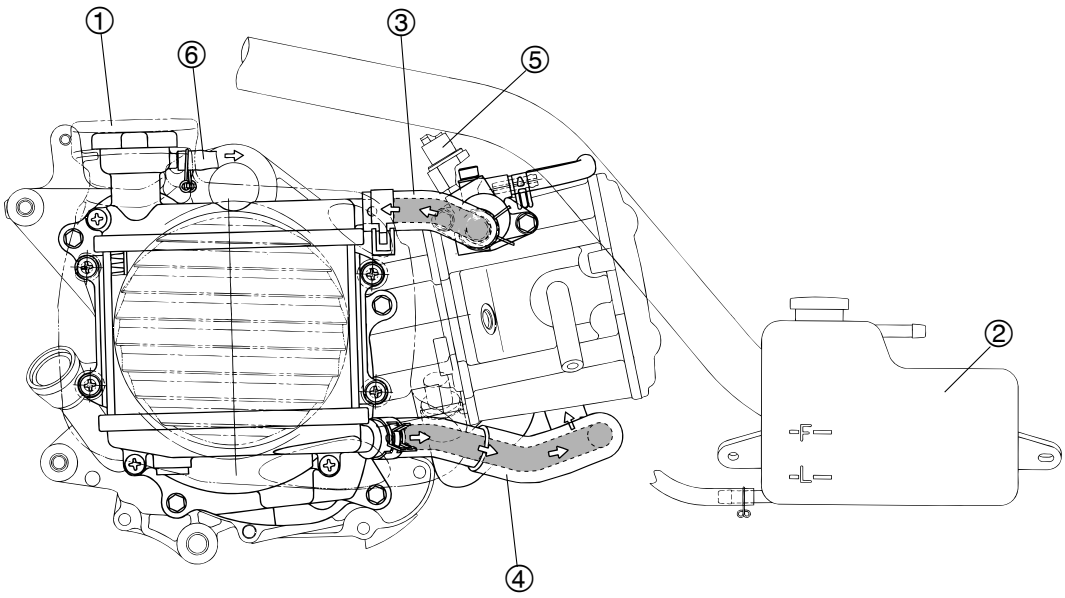
EAS00032
CHASSIS

Lubrication Point	Lubricant
Front wheel oil seal lips	LS
Steering bearing and bearing races (upper and lower)	LS
Frame head pipe dust seal lips (lower)	LS
Tube guide (throttle grip) inner surface	LS
Brake lever and lever holder bolt sliding surface	LS
Centerstand pivoting point and sliding surface	LS
Rear shock absorber backward, bush inner surface and spacer sliding surface	M
Seat lock cable and rear wheel lock cable inner surface	LS
Engine bracket and engine mound bolt sliding surface	LS

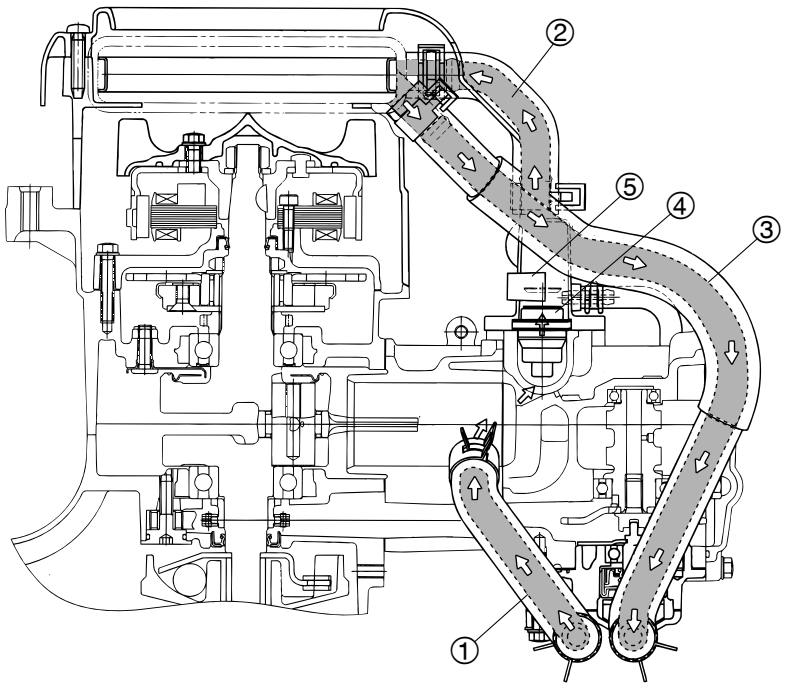
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COOLING SYSTEM DIAGRAMS

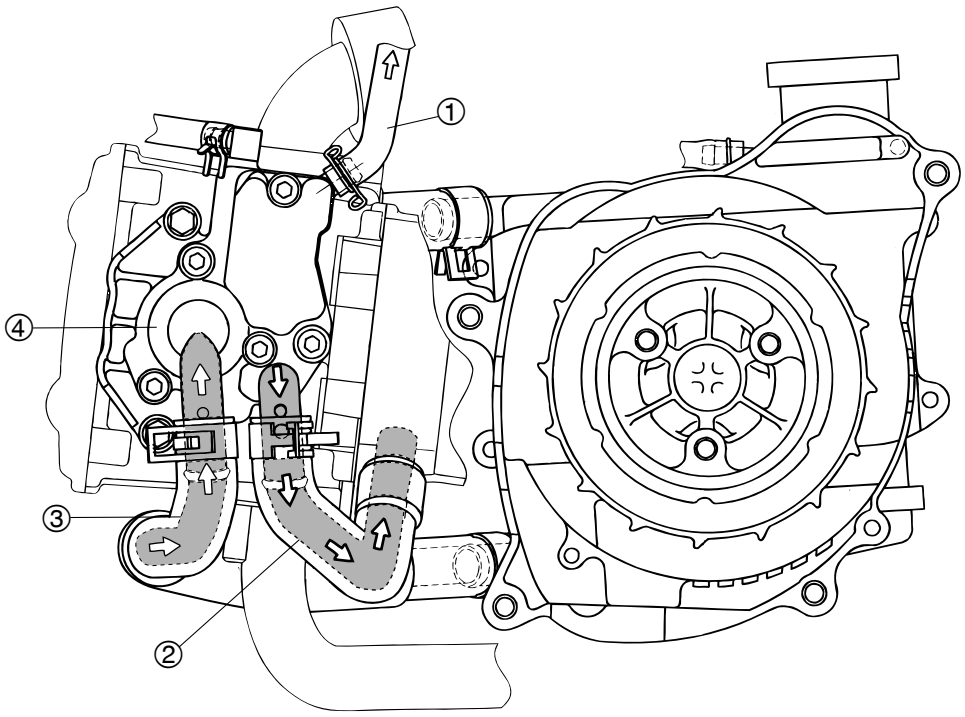
① Raidator cap
② Coolant reservoir
③ Radiator inlet hose
④ Radiator outlet hose
⑤ Thermo switch
⑥ Conduit hose



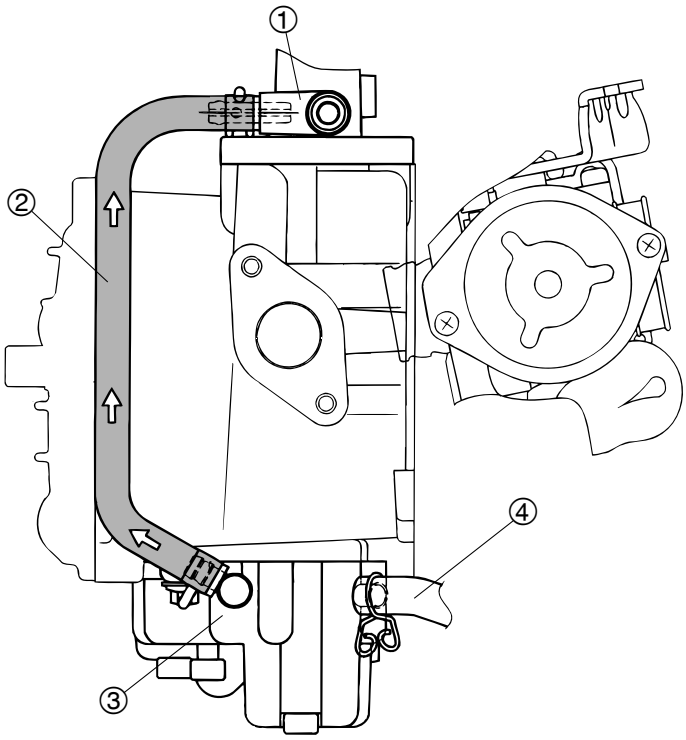
① Outlet hose(to cylinder)
② Radiator inlet hose
③ Radiator outlet hose
④ Thermostat
⑤ Thermostat housing



① Breather hose
② Outlet hose(to cylinder)
③ Radiator outlet hose
④ Water pump

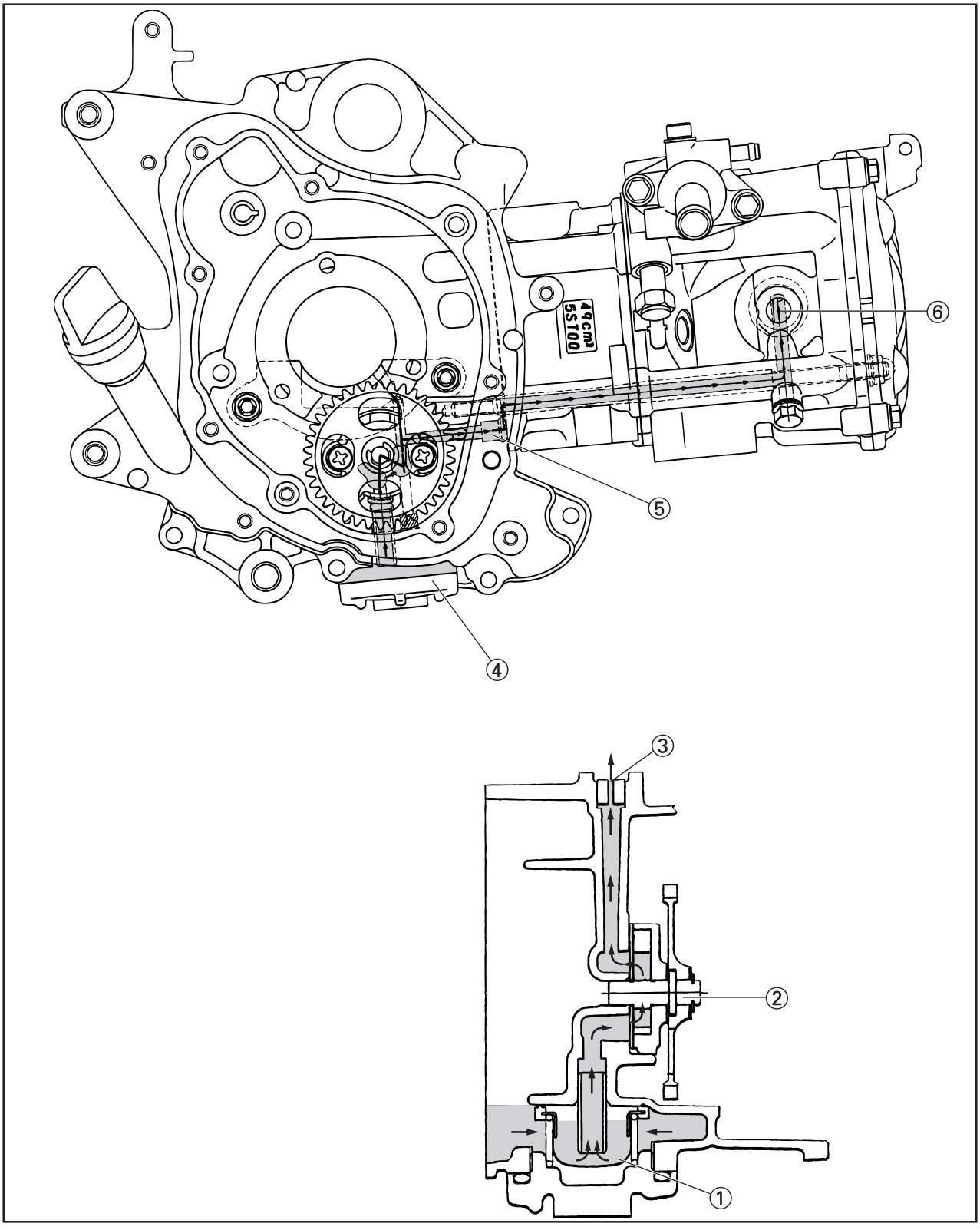


① Thermostat housing
② Thermostat assembly inlet breather hose
③ Water pump
④ Breather hose

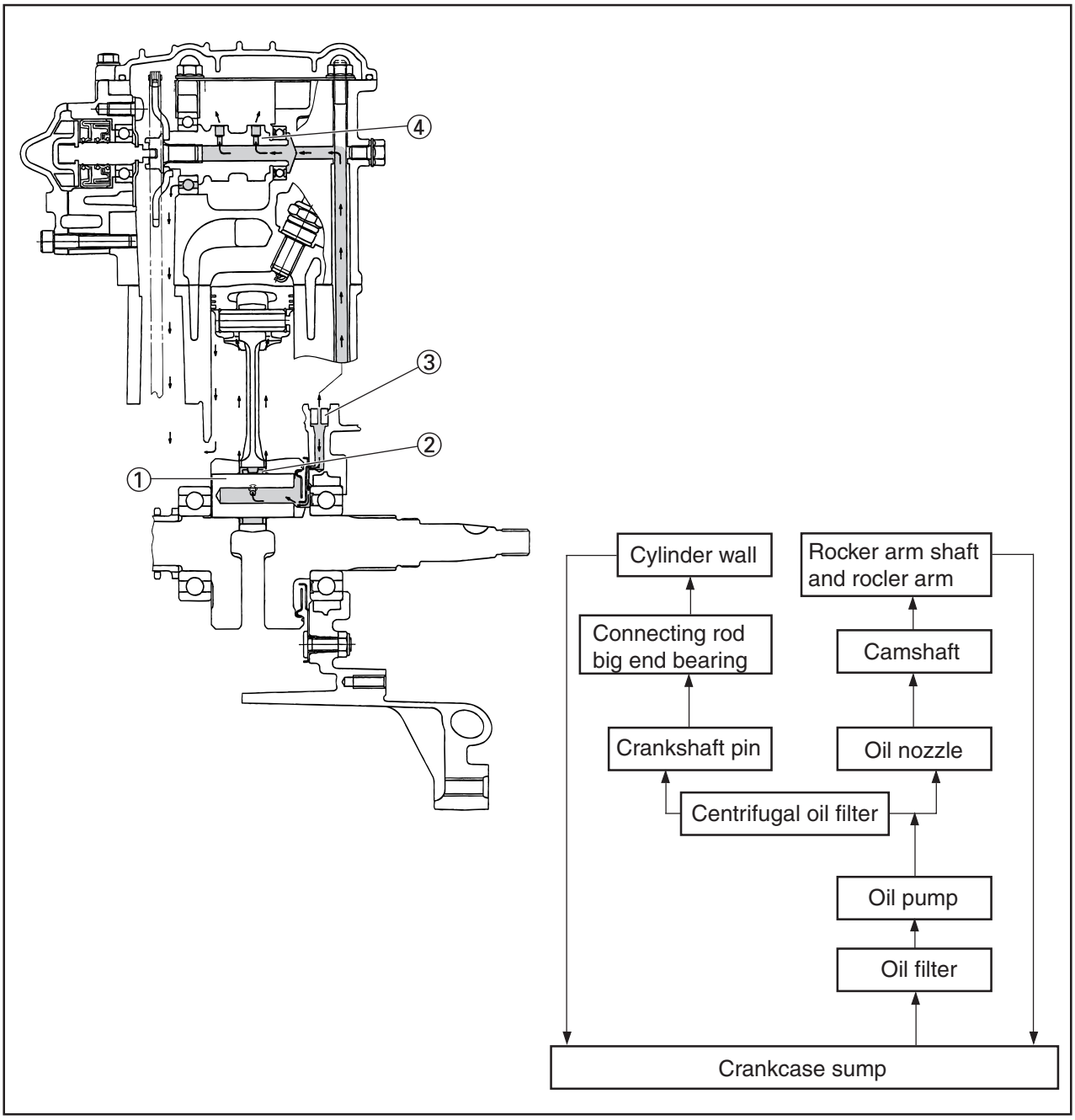


OIL FLOW DIAGRAMS

① Oil filter
② Oil pump
③ To cylinder head
④ Oil strainer
⑤ Oil nozzle
⑥ Camshaft



① Crankshaft pin
② Connecting rod big end bearing
③ Oil nozzle
④ Camshaft

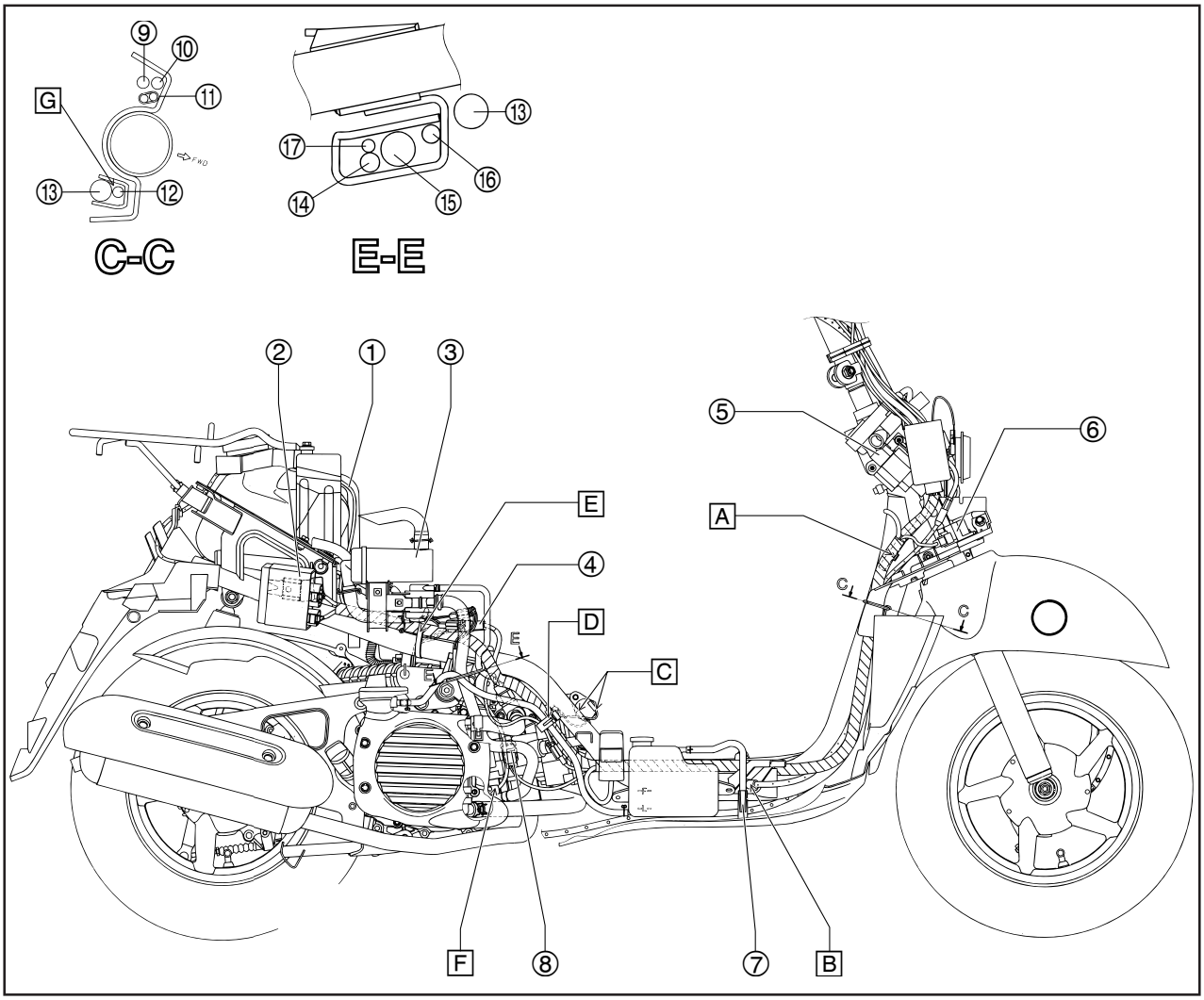


EAS00035

CABLE ROUTING

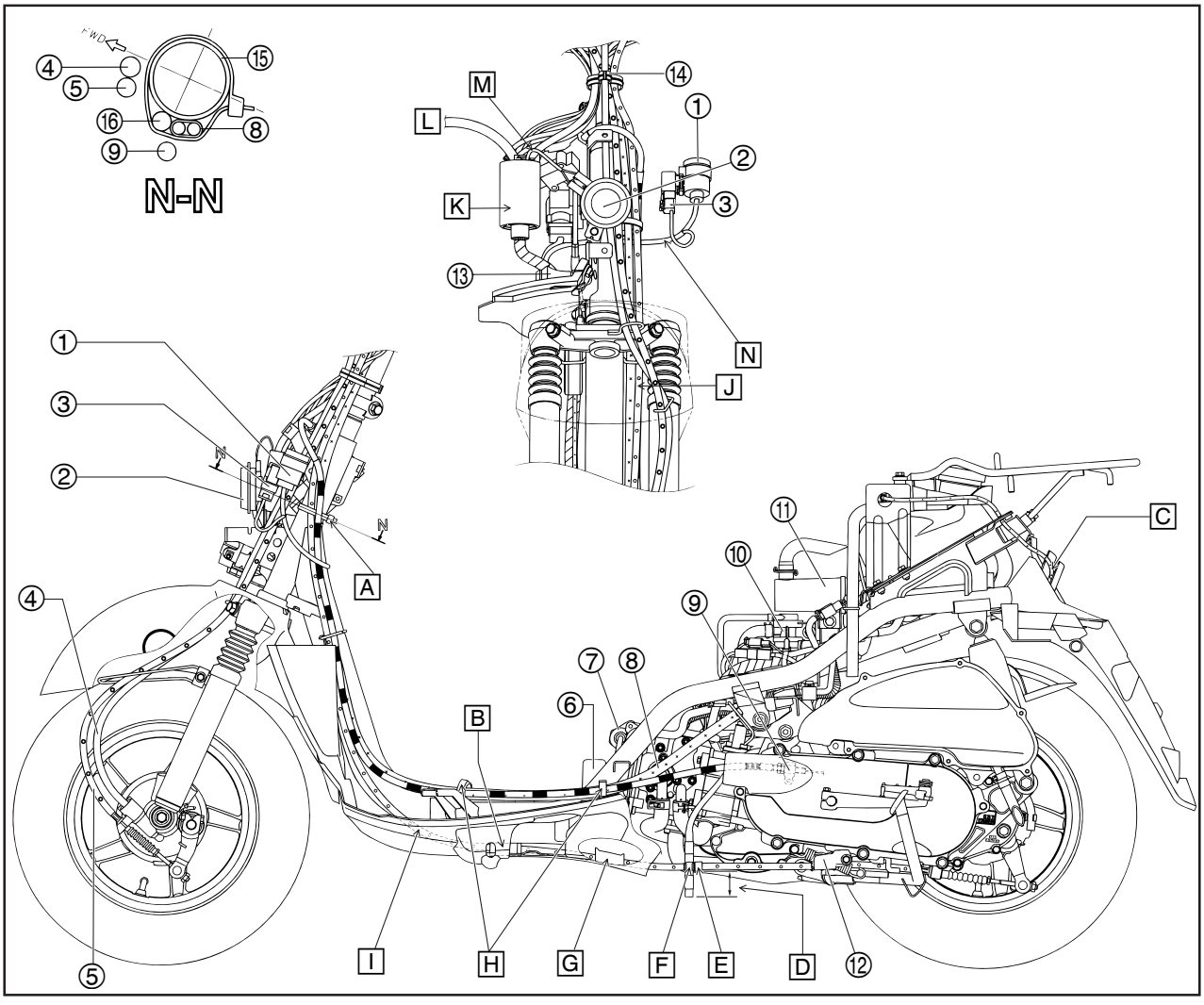
① Fuel sender lead
② C.D.I. unit
③ AI filter
④ Starter motor lead
⑤ Main switch
⑥ Rectifier/Regulator
⑦ Overflow pipe
⑧ Thermo unit
⑨ Rear wheel lock cable
⑩ Rear brake cable
⑪ Throttle cable kit
⑫ Seat lock cable
⑬ Wire harness
⑭ Hose
⑮ Bend hose
⑯ Vacuum sensing hose
⑰ AC magneto lead

A Insert the wire harness plate holder to the T-stud of down tube .
B Insert the seat lock cable into the frame, protector part to the hole position.
C Insert the L coupler to the ignition coil and installing direction of downward.
D Clamp the wire harness, thermo switch lead and conduit hose to the frame.
E Fasten the wire harness, AC magneto lead and starter motor lead to the frame with a plastic locking tie and end of plastic locking the upward.
F Route the AC magneto lead and bend hose through inside of the frame .
G Clamp the seat lock cable and wire harness to the frame of cover , install upward of the seat lock cable .

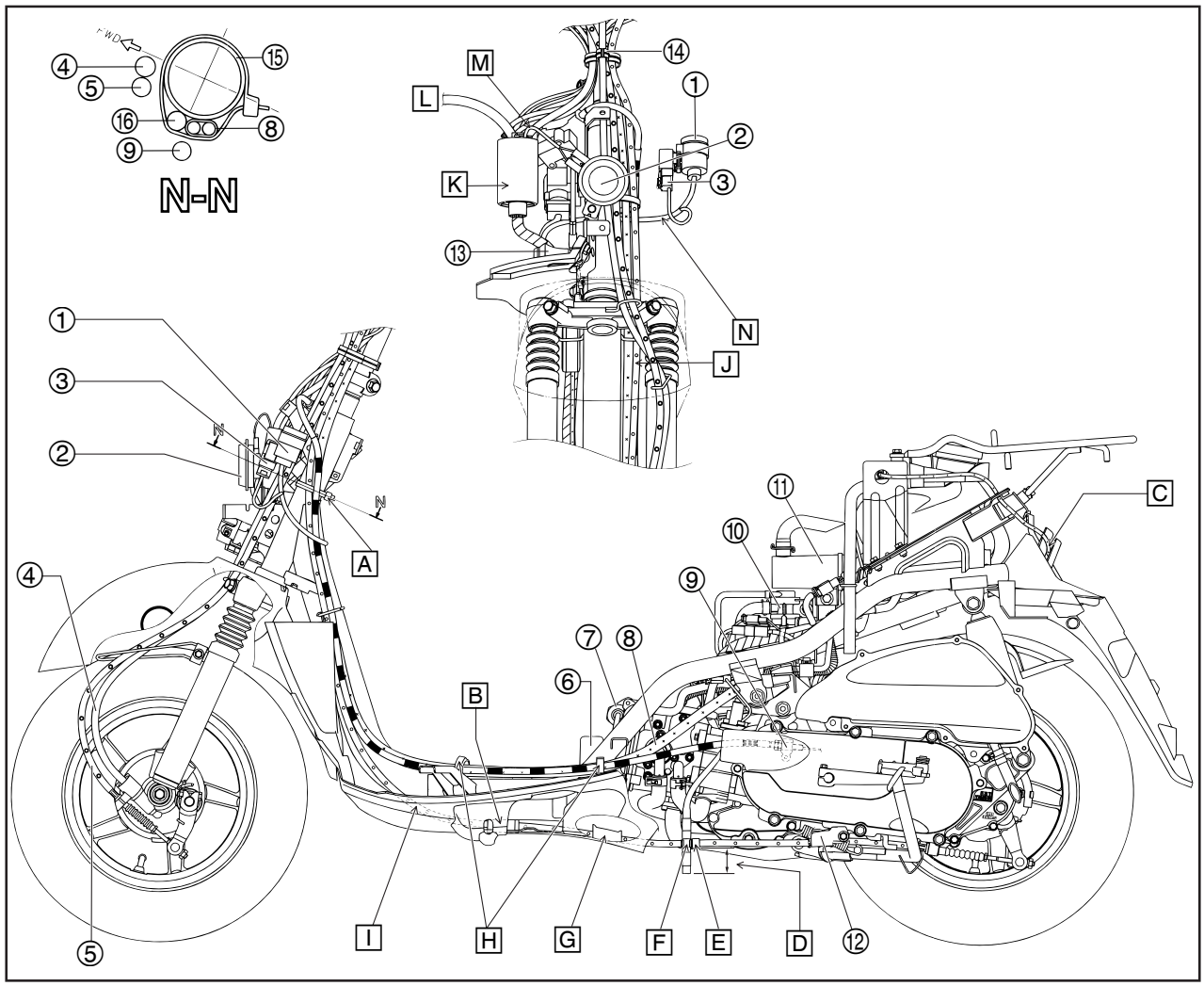


① Turn signal relay
② Horn
③ Head light relay
④ Speedometer cable
⑤ Front brake cable
⑥ Starter relay
⑦ Ignition coil
⑧ Throttle cable kit
⑨ Rear wheel lock cable
⑩ Air cut-off valve assembly
⑪ AI filter
⑫ Holder
⑬ Rectifier/Regulator
⑭ Clamp
⑮ Frame
⑯ Rear brake cable

[A] Fasten the throttle cable kit and rear brake cable to the frame and cut the end to be shorter than 5mm, point the band tip to backward and reserve for a finger clearance.
[B] Route the rear brake cable through guide of the under cover.
[C] Route the seat lock cable through the guard mub rib.
[D] 30~40mm
[E] Clamp the rear brake cable stopper.
[F] Clamp the carburetor drain hose to the rear brake cable, pass the rear brake cable outside the carburetor drain hose.
[G] Clamp the rear brake cable to the under cover rib.
[H] Clamp the throttle cable kit and Rear wheel lock cable through upward of the frame.
[I] Route the rear brake cable through downward of the frame and upward of the under cover.
[J] Route the rear brake cable, Rear wheel lock cable and throttle cable kit through side of the frame.
[K] Route the lever holder lead coupler(left and right), brake switch lead coupler(front and rear) and speedometer lead coupler into the connector cover. Position the connector cover on the rib of the leg shield 2.
[L] To the headlight and front turn signal light(left, right).

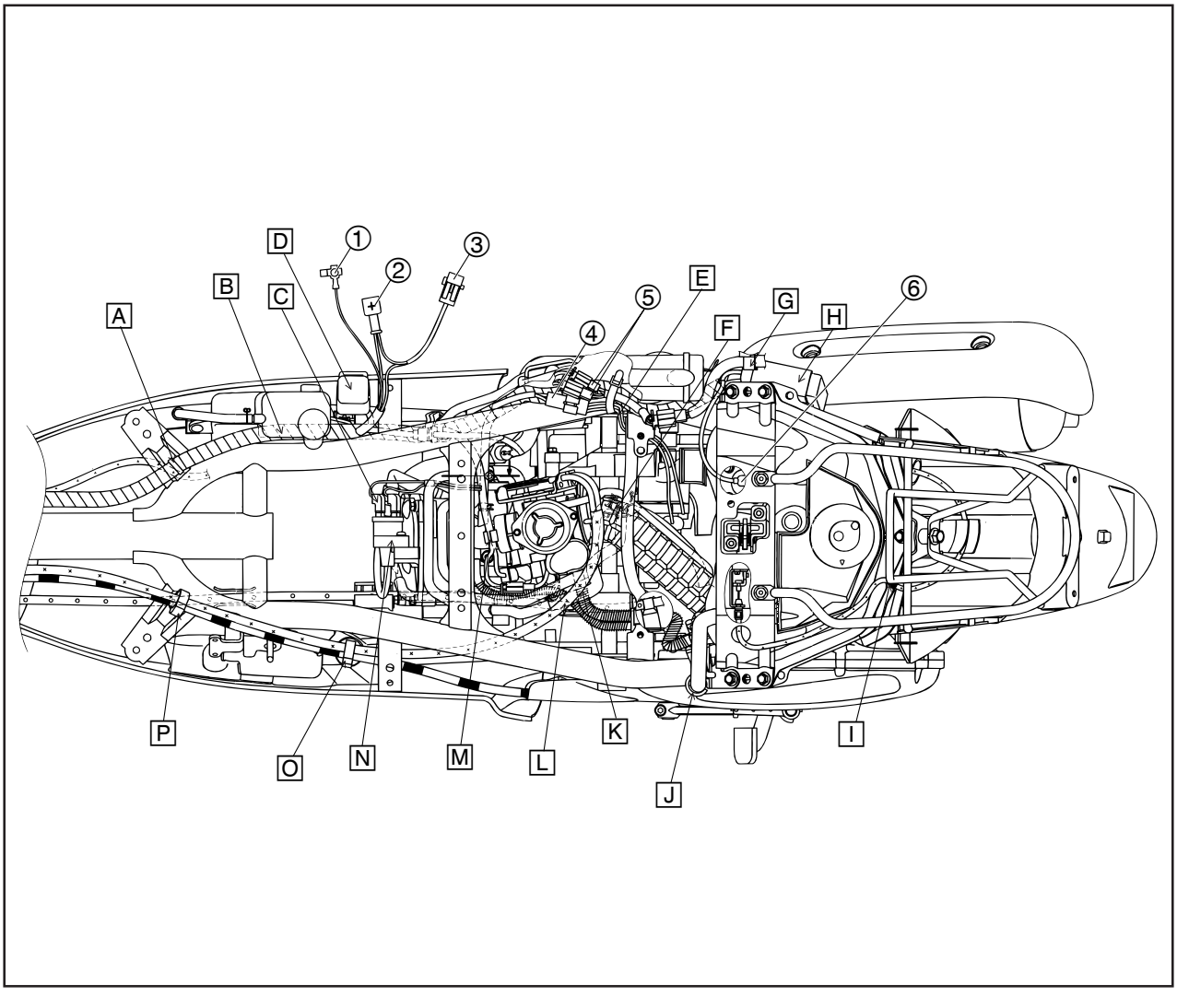


M Assemble the horn lead to the best forward of connector cover, do not through back side of the other leads.
N Route the turn signal relay lead and front turn signal light lead(left) through backward of the steering head pipe.



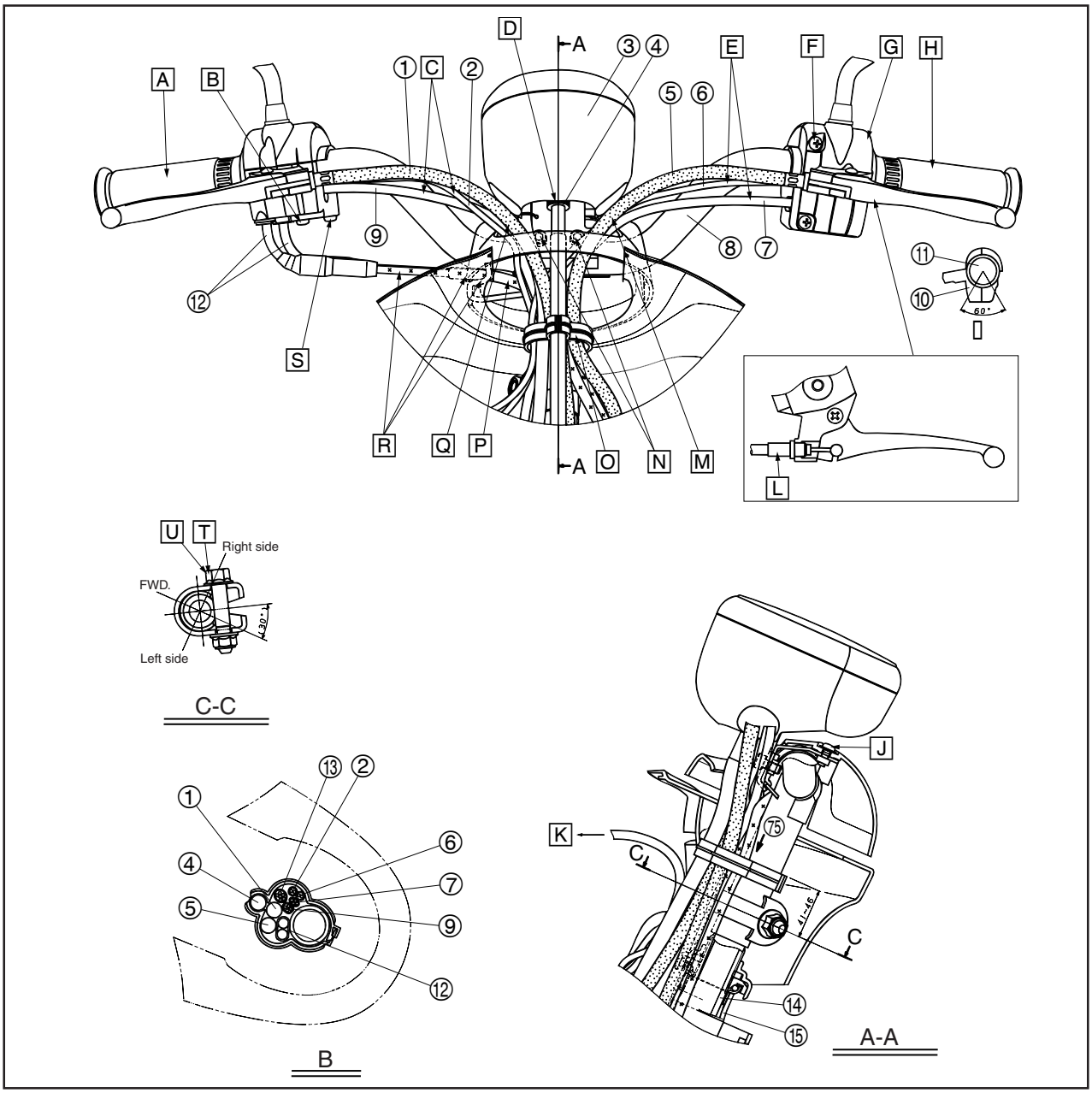
① Battery negative ⊖ lead
② Battery positive ⊕ lead
③ Fuse box
④ Starter motor lead
⑤ AC magneto lead
⑥ Fuel sender

[A] Insert the wire harness cable strap into the footrest bracket of hole.
[B] Route the wire harness through concave of the recovery tank and clamp it.
[C] Insert the ignition coil connector into the ignition coil ⊖ terminal.
[D] Clamp the starter relay to the under cover of rib.
[E] Route the starter motor lead through upward of the engine bracket and through left side of the wire harness.
[F] Route the breather pipe through downward of the spacer.
[G] Clamp the taillight lead to the side cover of hook.
[H] Install the C.D.I. unit to the fuel tank bracket of bracket 1.
[I] Clamp the seat lock cable protector of marking position to the fuel tank bracket.
[J] Route the drain pipe along the fuel tank bracket and through the clamp.
[K] Route the fuel hose and pipe 7 through downward of the breather pipe.
[L] Route the throttle cable kit through upward of the breather pipe.
[M] Clamp the auto choke lead and T.P.S. lead to the manifold of clamp.
[N] Install the ignition coil to the engine.
[O] Install the clamp to the under cover of hole.
[P] Install the clamp to the footrest bracket of hole.

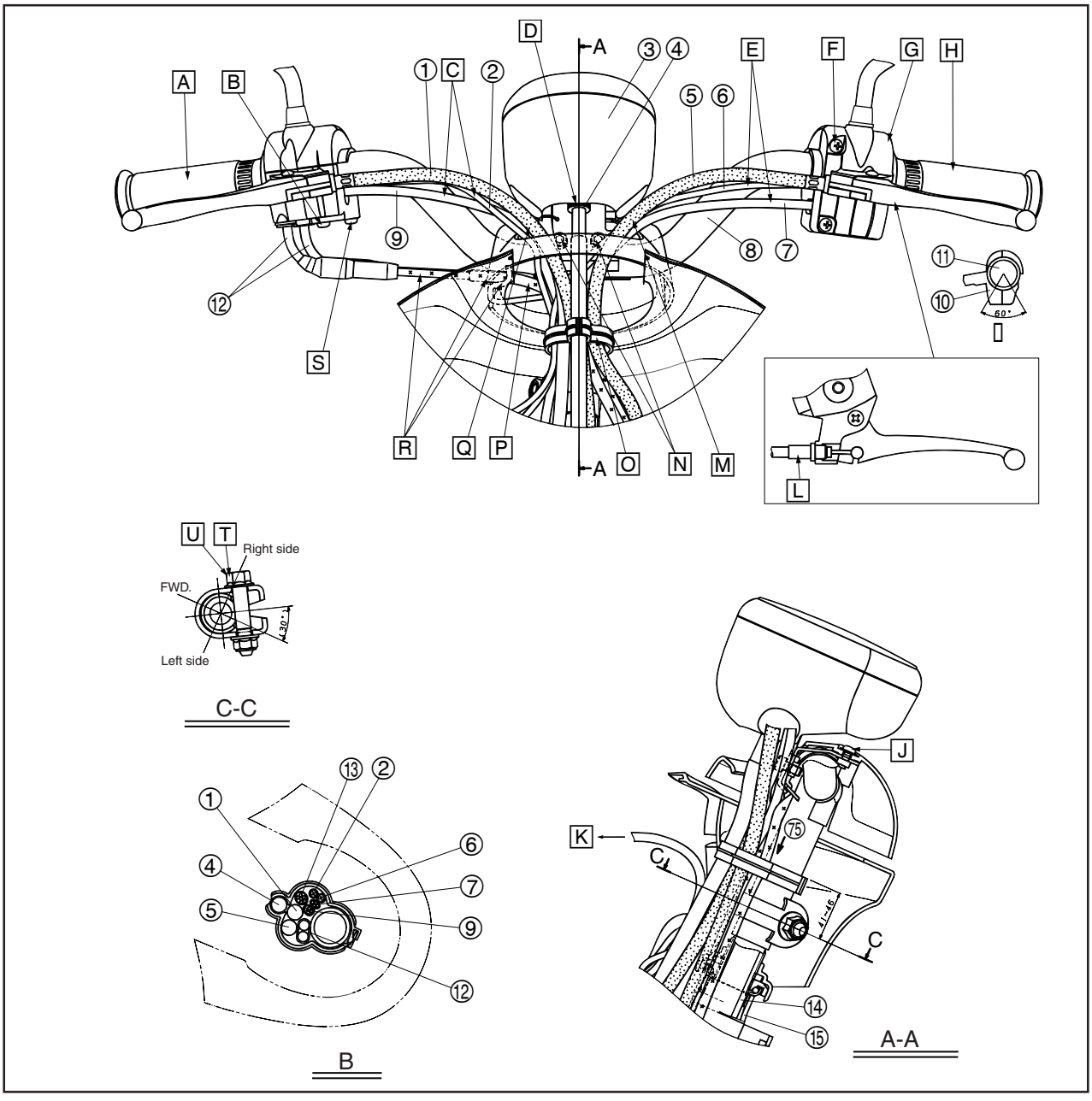


① Front brake cable
② Front brake switch lead
③ Speedometer assembly
④ Speedometer cable
⑤ Rear brake cable
⑥ Rear brake switch lead
⑦ Lever holder lead(left)
⑧ Handlebar
⑨ Lever holder lead(right)
⑩ Lever holder(left)
⑪ Grip(left)
⑫ Throttle cable kit
⑬ Speedometer assembly lead
⑭ Front fork
⑮ Frame

[A] After locking the right side switch of control lever, confirm the driving status of holder. Turn the holder then release your hand and retrieve the holder quickly.
[B] Install the throttle cable to the lever holder (right), and tightening torque 4Nm (0.4m•kg, 2.9ft•lb).
[C] Route the lever holder lead(right) and front brake switch lead along backward of the front brake cable.
[D] Install the speedometer cable to the speedometer assembly, and tightening torque 3Nm(0.3m.kg,2.2ft.lb).
[E] Route the lever holder lead(left) and lever holder lead(right) through backward of the rear brake cable.
[F] First, tighten the upper screw, when assembling the lever holder(left), and tightening torque 4Nm(0.4m•kg,2.9ft•lb).
[G] When assembled, the projecting part of the lever holder(left) should be in alignment with the handlebar Comp. hold position.



H After spread with adhesion agent on the inner side, push the grip into the handlebar assembly.
I Allow the gain position to arrive at this range.
J Install the handlebar cover to the handlebar bracket, and tightening torque 4Nm(0.4m•kg,2.9ft•lb).
K To the headlight.
L Insert the rear brake cable to the lever holder(left).
M When assembling the rear brake cable and speedometer cable, do not interfere.
N Install the speedometer assembly to the handlebar bracket, and tightening torque 7Nm (0.7m•kg,5.1ft•lb).
O When assembling the leads and cables, clamp and do not interfere.
P Route the throttle cable through best backward of the cables and leads.
Q When assembling the front brake cable and speedometer cable, do not interfere.
R Route the throttle cable through upper of handlebar guide and handlebar upper cover.
S First, tighten the back screw, when assembling the lever holder(right).
T Install the handlebar to the steering shaft, and tightening torque 4Nm (0.4m•kg,2.9ft•lb).
U Route the bolt through bike of right side, and tightening the nut.



CHK ADJ

CHAPTER 3
PERIODIC CHECKS AND ADJUSTMENTS

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EAS00036

PERIODIC CHECKS AND ADJUSTMENTS

INTRODUCTION

This chapter includes all information necessary to perform recommended checks and adjustments. If followed, these preventive maintenance procedures will ensure more reliable vehicle operation, a longer service life and reduce the need for costly overhaul work. This information applies to vehicles already in service as well as to new vehicles that are being prepared for sale. All service technicians should be familiar with this entire chapter.

NOTE:

The annual checks must be performed every year, except if a kilometer-based maintenance is performed instead.

From 30,000 km, repeat the maintenance intervals starting from 6,000 km.

Items marked with an asterisk should be performed by a Yamaha dealer as they require special tools, data and technical skills.

EAU17560*

PERIODIC MAINTENANCE AND MINOR REPAIR

Periodic maintenance chart for the emission control system

NO.		ITEM	ROUTINE	INITIAL	ODOMETER READING				
				600 mi (1,000 km) or 1 month	2,000 mi (4,000 km) or 6 months	4,000 mi (7,000 km) or 12 months	6,000 mi (10,000 km) or 18 months	8,000 mi (13,000 km) or 24 months	10,000 mi (16,000 km) or 30 months
1	*	**Fuel line**	• Check fuel and vacuum hoses for cracks or damage. • Replace if necessary.		√	√	√	√	√
2		**Spark plug**	• Check condition. • Adjust gap and clean. • Replace at 4000 mi (7000 km) or 12 months and thereafter every 4000 mi (6000 km) or 12 months.		√	Replace.	√	Replace.	√
3	*	**Valve clearance**	• Check and adjust valve clearance when engine is cold.	√	Every 6000 mi (10000 km)				
4	*	**Crankcase breather system**	• Check breather hose for cracks or damage. • Replace if necessary.		√	√	√	√	√
5	*	**Idle speed**	• Check and adjust engine idle speed.	√	√	√	√	√	√
6	*	**Exhaust system**	• Check for leakage. • Tighten if necessary. • Replace gasket(s) if necessary.		√	√	√	√	√
7	*	**Air induction system**	• Check the air cut-off valve, reed valve, and hose for damage. • Replace any damaged parts.		√	√	√	√	√

* Since these items require special tools, data and technical skills, have a Yamaha dealer perform the service.

General maintenance and lubrication chart
Maintenance and lubrication, periodic

NO.		ITEM	ROUTINE	INITIAL	ODOMETER READING				
				600 mi (1,000 km) or 1 month	2,000 mi (4,000 km) or 6 months	4,000 mi (7,000 km) or 12 months	6,000 mi (10,000 km) or 18 months	8,000 mi (13,000 km) or 24 months	10,000 mi (16,000 km) or 30 months
1	*	**Air filter element**	• Replace.		√	√	√	√	√
2	*	**Front brake**	• Check operation. • Adjust cable and replace brake shoes if necessary.	√	√	√	√	√	√
3	*	**Rear brake**	• Check operation. • Adjust cable and replace brake shoes if necessary.	√	√	√	√	√	√
4	*	**Wheels**	• Check runout and for damage. • Replace if necessary.		√	√	√	√	√
5	*	**Tires**	• Check tread depth and for damage. • Replace if necessary. • Check air pressure. • Correct if necessary.		√	√	√	√	√
6	*	**Wheel bearings**	• Check bearings for smooth operation. • Replace if necessary.		√	√	√	√	√
7	*	**Steering bearings**	• Check bearing assemblies for looseness. • Moderately repack with lithium-soap-based grease every 8000 mi (13000 km) or 24 months.	√	√	√	√	Repack.	√
8	*	**Chassis fasteners**	• Check all chassis fitting and fasteners. • Correct if necessary.		√	√	√	√	√
9		**Front and rear brake lever pivot**	• Apply lithium-soap-based grease (all-purpose grease) lightly.		√	√	√	√	√
10		**Centerstand**	• Check operation. • Lubricate.		√	√	√	√	√
11	*	**Front fork**	• Check operation and for oil leakage. • Replace if necessary.		√	√	√	√	√
12	*	**Shock absorber assembly**	• Check operation and for oil leakage. • Replace if necessary.		√	√	√	√	√
13		**Engine oil**	• Change (warm engine before draining). • Check oil level and vehicle for oil leakage.	√	√	√	√	√	√
14		**Engine oil strainer**	• Clean.	√		√		√	
15	*	**Cooling system**	• Check coolant level and vehicle for coolant leakage.		√	√	√	√	√
			• Change.	Every 3 years					
16		**Final transmission oil**	• Check vehicle for oil leakage. • Change.	√		√		√	
17	*	**V-belt**	• Replace.	Every 6250 mi (10000 km)					
18	*	**Front and rear brake switches**	• Check operation.	√	√	√	√	√	√
19	*	**Control and meter cables**	• Apply Yamaha chain and cable lube or engine oil 10W-30 thoroughly.	√	√	√	√	√	√
20	*	**Throttle grip housing and cable**	• Check operation and free play. • Adjust the throttle cable free play if necessary. • Lubricate the throttle grip housing and cable.		√	√	√	√	√
21	*	**Lights, signals and switches**	• Check operation. • Adjust headlight beam.	√	√	√	√	√	√

* Since these items require special tools, data and technical skills, have a Yamaha dealer perform the service.

NOTE:

From 12000 mi (19000 km) or 36 months, repeat the maintenance intervals starting from 4000 mi (7000 km) or 12 months.

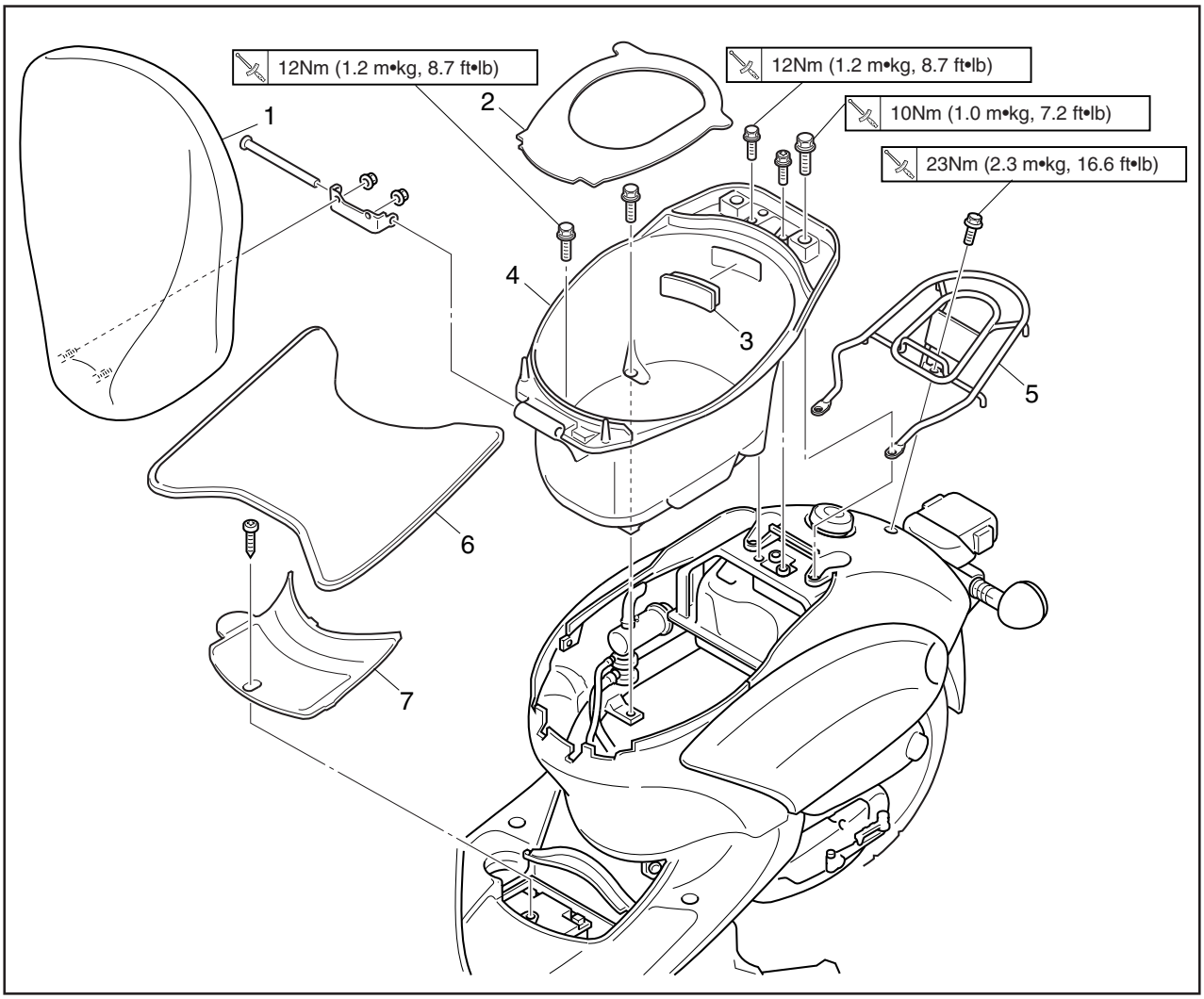
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NOTE:

The air filter needs more frequent service if you are riding in unusually wet or dusty areas.

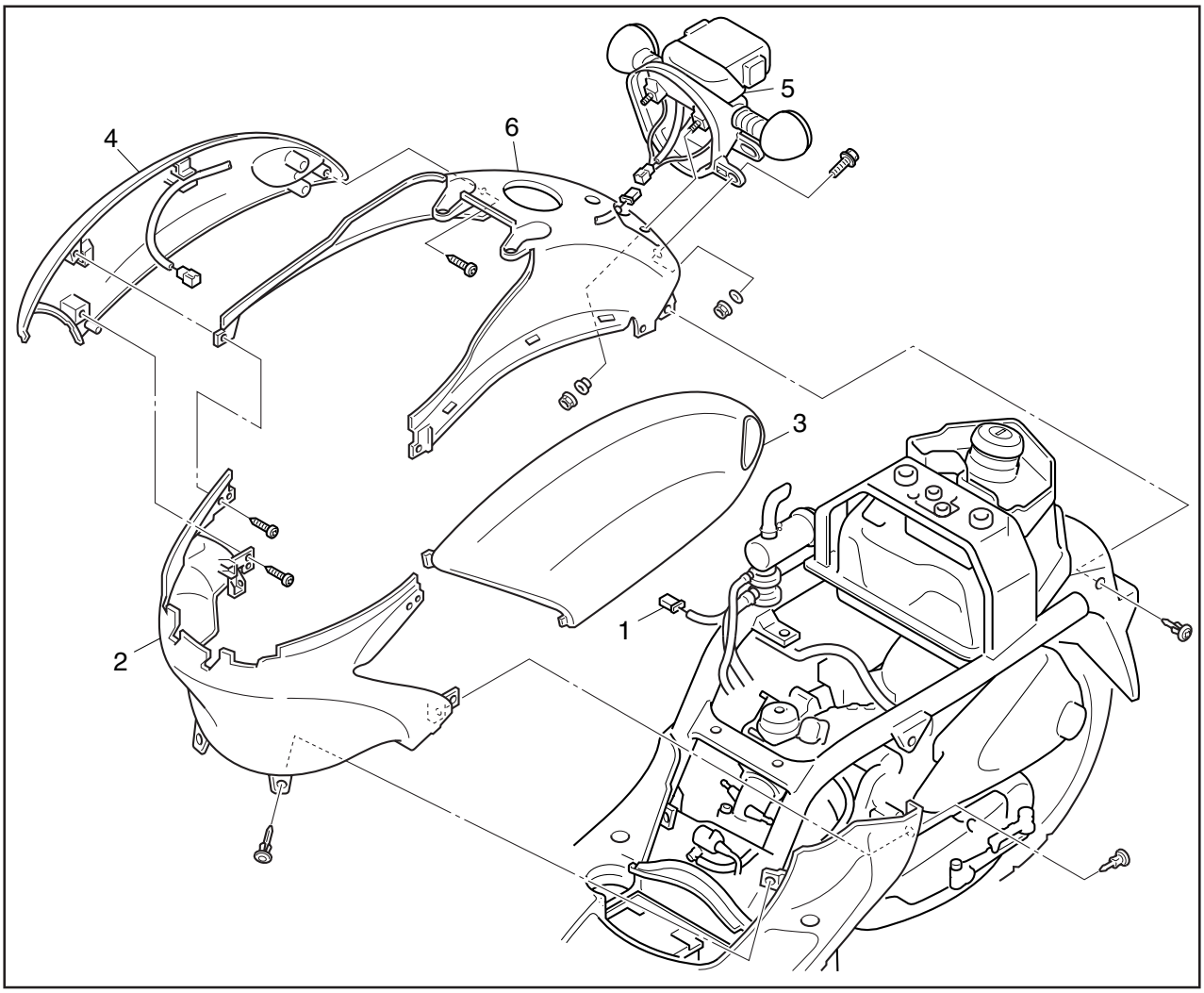
COVER AND PANEL

SEAT AND TRUNK



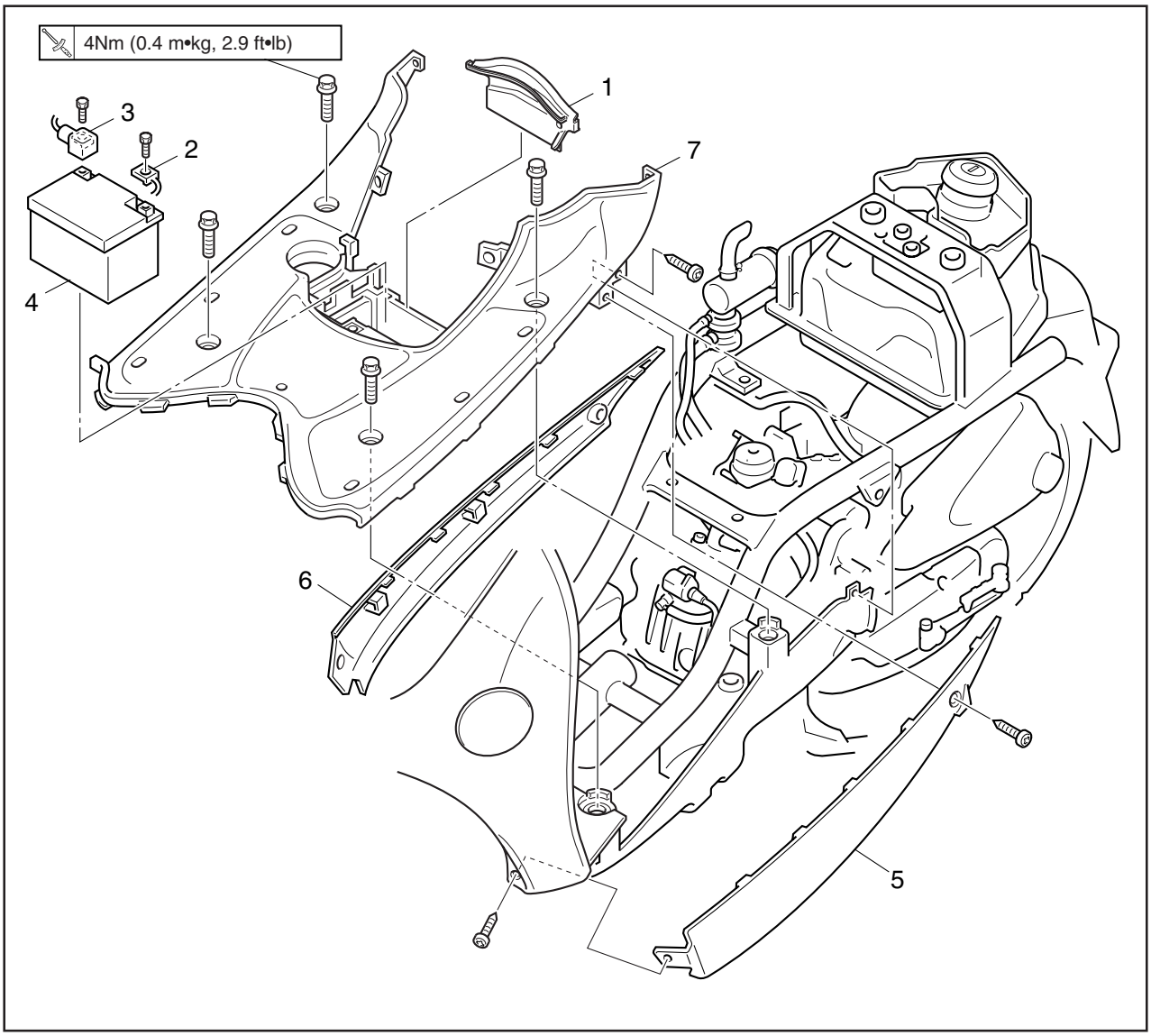
Order	Job/Part	Q'ty	Remarks
	Removing the seat and trunk		Remove the parts in the order listed.
1	Seat	1	
2	Damper	1	
3	Rubber cap	1	
4	Trunk	1	
5	Rear carrier	1	
6	Mat	1	
7	Battery cover	1	
			For installation, reverse the removal procedure.

SIDE COVER (LEFT AND RIGHT)



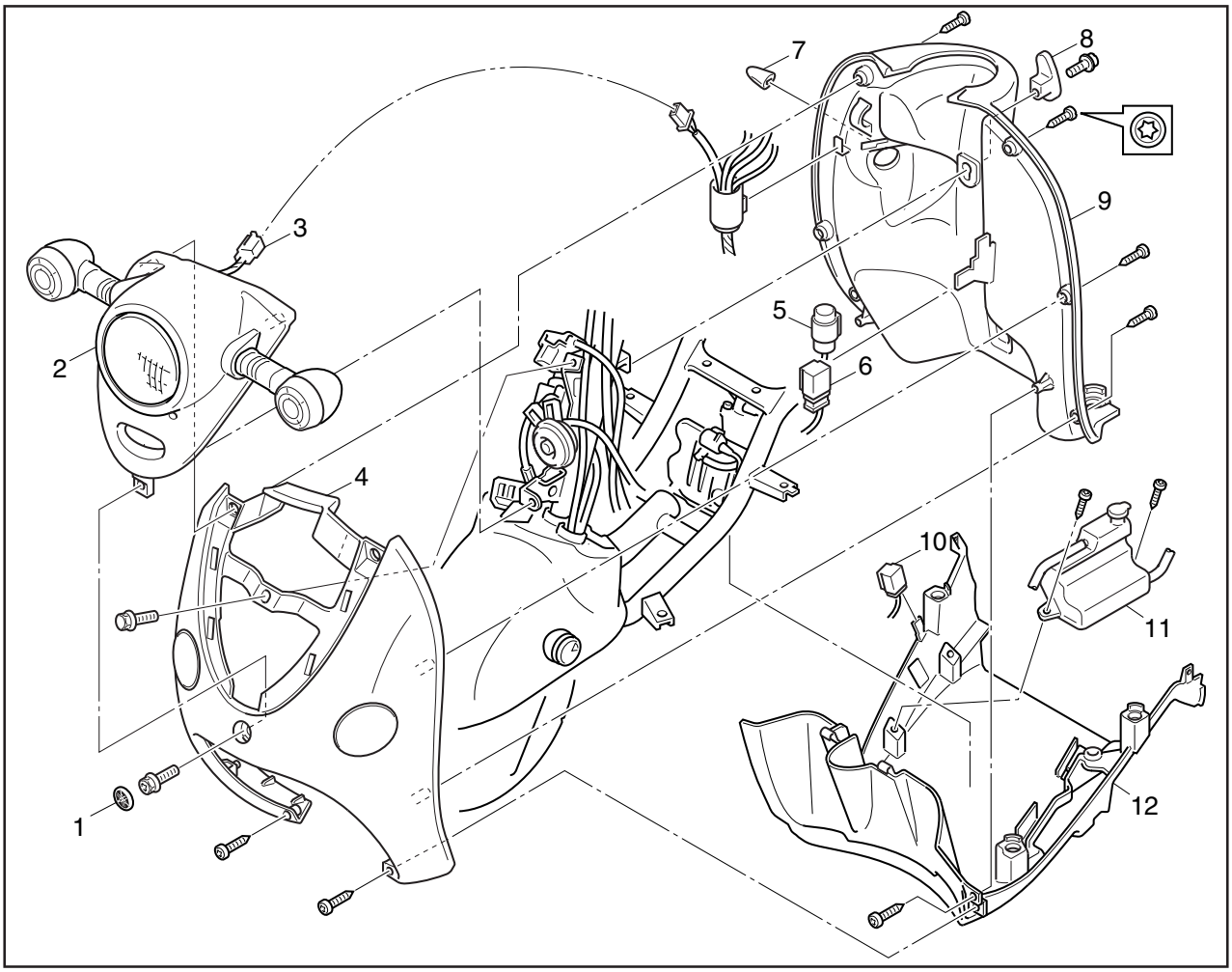
Order	Job/Part	Q'ty	Remarks
	Removing the side cover(left and right)		Remove the parts in the order listed.
	Seat/Trunk		Refer to "SEAT AND TRUNK".
1	Tail / brake and rear turn signal (left, right) light lead	1	Disconnect.
2	Front cover	1	
3	Side cover(left)	1	
4	Side cover(right)	1	
5	Tail/brake light	1	
6	Rear cover	1	
			For installation, reverse the removal procedure.

FOOTREST BOARD AND FOOTREST BOARD SIDE COVER MOLE



Order	Job/Part	Q'ty	Remarks
	Removing the footrest board and footrest board side cover mole		Remove the parts in the order listed.
	Side cover(left and right)		Refer to "SIDE COVER(LEFT AND RIGHT)".
1	Battery holder	1	
2	Battery negative ⊖ lead	1	**CAUTION:**
3	Battery positive ⊕ lead	1	**First, disconnect the negative battery lead, and then the positive battery lead.**
4	Battery	1	
5	Footrest board side cover mole(left)	1	
6	Footrest board side cover mole(right)	1	
7	Footrest board	1	
			For installation, reverse the removal procedure.

LEG SHIELD 1 , 2



Order	Job/Part	Q'ty	Remarks
	Removing the leg shield 1,2 Footrest board		Remove the parts in the order listed. Refer to "FOOTREST BOARD AND FOOTREST BOARD SIDE COVER MOLE".
1	Cap	1	
2	Headlight cover	1	
3	Head and front turn signal (left, right) light lead	1	Disconnect.
4	Leg shield 1	1	
5	Turn signal relay	1	Disconnect.
6	Headlight relay	1	Disconnect.
7	Rear wheel lock clip	1	
8	Hook	1	
9	Leg shield 2	1	
10	Starter relay	1	Disconnect.
11	Coolant reservoir	1	Disconnect.
12	Under cover	1	
			For installation, reverse the removal procedure.

EAS00049

ENGINE

ADJUSTING THE VALVE CLEARANCE

The following procedure applies to all of the valves.

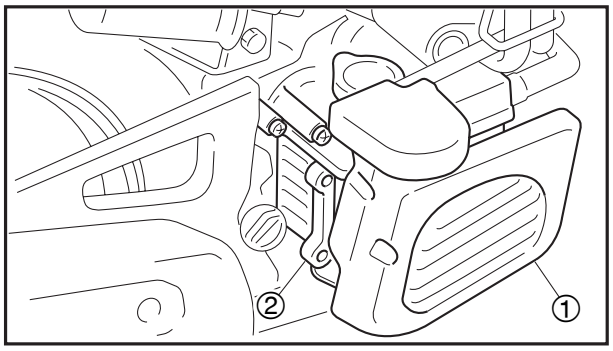
NOTE:

- Valve clearance adjustment should be made on a cold engine, at room temperature.
- When the valve clearance is to be measured or adjusted, the piston must be at top dead center (TDC) on the compression stroke.

1. Remove:
 - seat/trunk
 - battery cover
 - battery holder
 - front cover

 Refer to “COVER AND PANEL”.
2. Drain:
 - coolant

 (completely from the radiator)



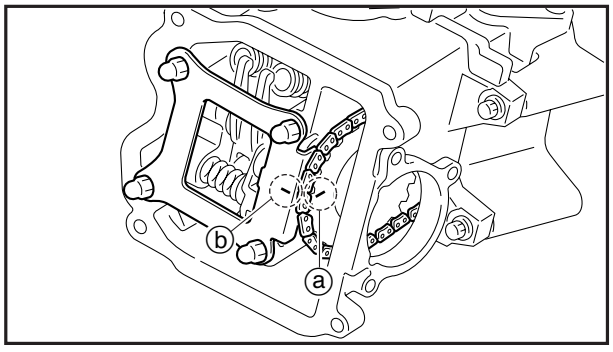
3. Remove:
 - radiator cover ①
 - radiator
 - fan case②

 Refer to “RADIATOR”in chapter 6.
4. Remove:
 - spark plug cap
 - spark plug
 - ignition coil
 - cylinder head cover

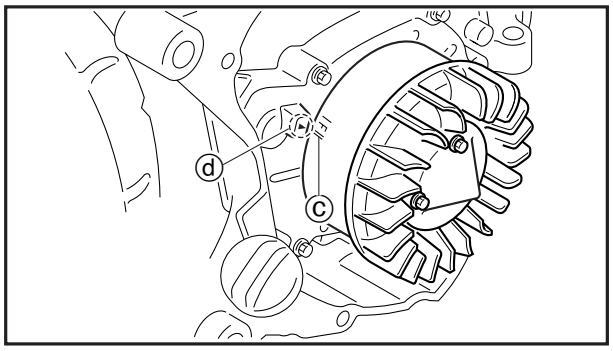
5. Measure:
 - valve clearance

 Out of specification → Adjust.

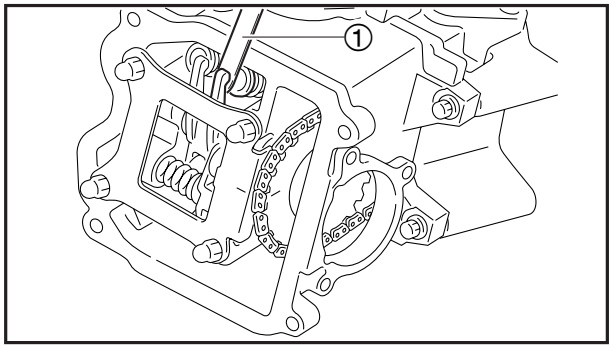
Valve clearance (cold)
Intake valve
0.10 ~ 0.16 mm (0.004 ~ 0.006 in)
Exhaust valve
0.18 ~ 0.24 mm (0.007 ~ 0.010 in)

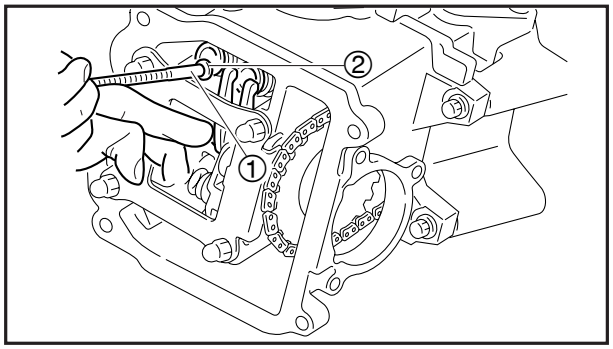


a. Turn the crankshaft counterclockwise.
b. When the piston is at TDC on the compression stroke, align the punch mark ⓐ in the camshaft sprocket with the stationary ⓑ on the plate.
c. Align the TDC mark ⓒ on the AC magneto rotor with the stationary pointer ⓓ on the crankcase cover.



d. Measure the valve clearance with a thickness gauge ①.
Out of specification → Adjust.





6. Adjust:
●valve clearance

a. Remove the valve pad ② with a magnetic bar ①.

NOTE:

- Cover the timing chain opening with a rag to prevent the valve pad from falling into the crankcase.
- Make a note of the position of each valve pad so that they can be installed in the correct place.

b. Select the proper valve pad from the following table.

Valve pad thickness range		Available valve pads
Nos. 120 ~ 240	1.20 (0.047in) ~ 2.40 mm (0.095 in)	25 thicknesses in 0.05 mm (0.002 in) increments

c. Round off the original valve pad number according to the following table.

Last digit	Rounded value
0 or 2	0
5	5
8	10

EXAMPLE:
Original valve pad number = 148 (thickness =1.48 mm (0.058 in))

Rounded value = 150

d. Locate the rounded number of the original valve pad and the measured valve clearance in the valve pad selection table. The point where the column and row intersect is the new valve pad number.

NOTE:
The new valve pad number is only an approximation. The valve clearance must be measured again and the above steps should be repeated if the measurement is still incorrect.

e. Install the new valve pad .

NOTE:
- Lubricate the valve pad with molybdenum disulfide oil.
- Install the valve pad in the correct place.

f. Measure the valve clearance again.
g. If the valve clearance is still out of specification, repeat all of the valve clearance adjustment steps until the specified clearance is obtained.

INTAKE

MEASURED CLEARANCE	ORIGINAL VALVE PAD NUMBER																								
	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240
0.00~0.04			120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
0.05~0.09		120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235
0.10~0.16	STANDARD CLEARANCE																								
0.17~0.21	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	
0.22~0.26	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240		
0.27~0.31	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240			
0.32~0.36	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240				
0.37~0.41	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240					
0.42~0.46	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240						
0.47~0.51	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240							
0.52~0.56	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240								
0.57~0.61	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240									
0.62~0.66	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240										
0.67~0.71	175	180	185	190	195	200	205	210	215	220	225	230	235	240											
0.72~0.76	180	185	190	195	200	205	210	215	220	225	230	235	240												
0.77~0.81	185	190	195	200	205	210	215	220	225	230	235	240													
0.82~0.86	190	195	200	205	210	215	220	225	230	235	240														
0.87~0.91	195	200	205	210	215	220	225	230	235	240															
0.92~0.96	200	205	210	215	220	225	230	235	240																
0.97~1.01	205	210	215	220	225	230	235	240																	
1.02~1.06	210	215	220	225	230	235	240																		
1.07~1.11	215	220	225	230	235	240																			
1.12~1.16	220	225	230	235	240																				
1.17~1.21	225	230	235	240																					
1.22~1.26	230	235	240																						
1.27~1.31	235	240																							
1.32~1.36	240																								

Valve Clearance (cold)
0.10~0.16 mm
Rounded value 175
Measured valve clearance is 0.24 mm
Replace pad 175 with pad 185
Pad No. 175 = 1.75 mm
Pad No. 185 = 1.85 mm
Always install the valve pad with the number facing down.

EXHAUST

MEASURED CLEARANCE	ORIGINAL VALVE PAD NUMBER																								
	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240
0.00~0.02					120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220
0.03~0.07				120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225
0.08~0.12			120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
0.13~0.17		120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235
0.18~0.24	STANDARD CLEARANCE																								
0.25~0.29	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	
0.30~0.34	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240		
0.35~0.39	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240			
0.40~0.44	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240				
0.45~0.49	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240					
0.50~0.54	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240						
0.55~0.59	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240							
0.60~0.64	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240								
0.65~0.69	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240									
0.70~0.74	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240										
0.75~0.79	175	180	185	190	195	200	205	210	215	220	225	230	235	240											
0.80~0.84	180	185	190	195	200	205	210	215	220	225	230	235	240												
0.85~0.89	185	190	195	200	205	210	215	220	225	230	235	240													
0.90~0.94	190	195	200	205	210	215	220	225	230	235	240														
0.95~0.99	195	200	205	210	215	220	225	230	235	240															
1.00~1.04	200	205	210	215	220	225	230	235	240																
1.05~1.09	205	210	215	220	225	230	235	240																	
1.10~1.14	210	215	220	225	230	235	240																		
1.15~1.19	215	220	225	230	235	240																			
1.20~1.24	220	225	230	235	240																				
1.25~1.29	225	230	235	240																					
1.30~1.34	230	235	240																						
1.35~1.39	235	240																							
1.40~1.44	240																								

Valve Clearance (cold)
0.18~0.24 mm
Rounded value 175
Measured valve clearance is 0.32 mm
Replace pad 175 with pad 185
Pad No. 175 = 1.75 mm
Pad No. 185 = 1.85 mm
Always install the valve pad with the number facing down.

7. Install:
 - all removed parts

NOTE:
For installation, reverse the removal procedure.

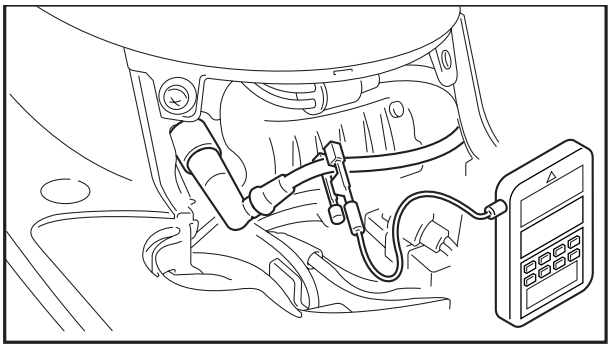
8. Fill:
 - cooling system
 (with the specified amount of the recommended coolant)
 Refer to “CHANGING THE COOLANT”.

EAS00054

ADJUSTING THE ENGINE IDLING SPEED

NOTE:

Prior to adjusting the engine idling speed, the air filter element should be clean, and the engine should have adequate compression.

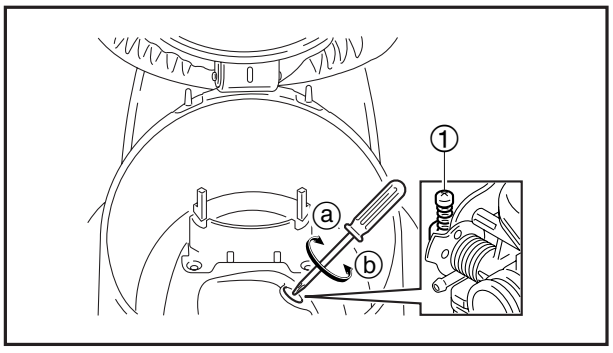


1. Start the engine and let it warm up for several minutes.
2. Connect:
 - engine tachometer
 (onto the spark plug lead of cylinder)

Engine tachometer
90890-03113
YU-08036-C

3. Check:
 - engine idling speed
 Out of specification → Adjust

Engine idling speed
2000 ~ 2400 r/min



4. Adjust:
 - engine idling speed

a . Turn the throttle stop screw ① in direction ⓐ or ⓑ until the specified engine idling speed is obtained.

Direction ⓐ	Engine idling speed is increased.
Direction ⓑ	Engine idling speed is decreased.

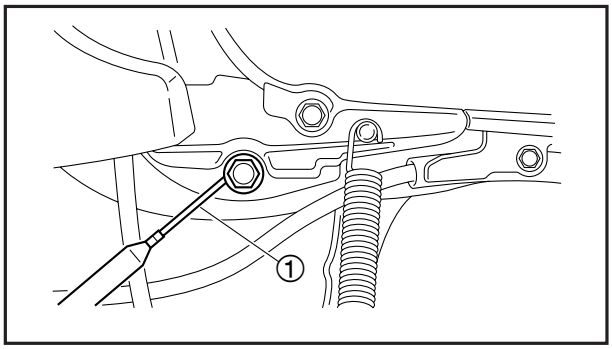
5 . Adjust:
 - throttle cable free play
 Refer to “ADJUSTING THE THROTTLE CABLE FREE PLAY”.

Throttle cable free play (at the flange of the throttle grip)
1.5 ~ 3.5 mm (0.059 ~ 0.138 in)

CHECKING THE EXHAUST GAS AT IDLE
(Measuring the exhaust gas at idle(when air induction system is operation))

1. Stand the scooter on a level surface.

NOTE:
- Place the scooter on a suitable stand.
- Make sure the scooter is upright.



2. Install:
 - pocket tester①.
 (onto the engine oil drain bolt)
 - engine tachometer
 (onto the spark plug lead)

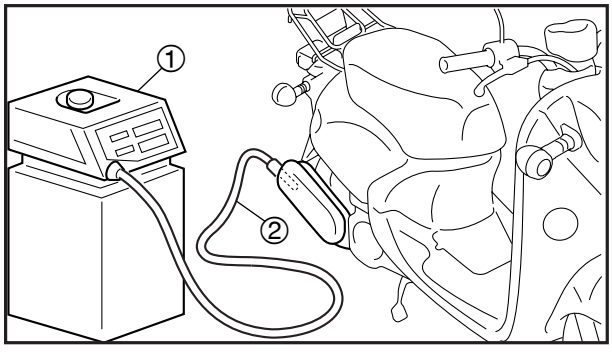
Pocket tester
90890-03132
YU-03112-C
Engine tachometer
90890-03113
YU-08036-C

3. Start the engine and warm it up until the specified oil temperature is reached.

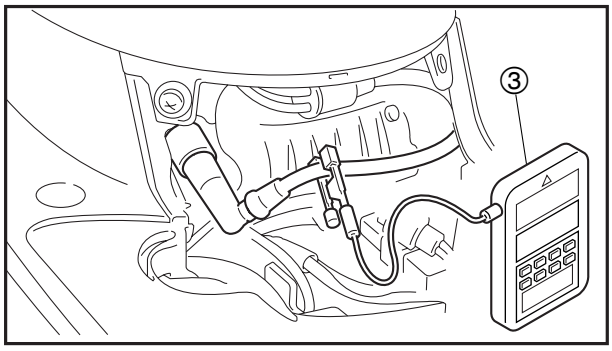
Oil temperature
50~70°C

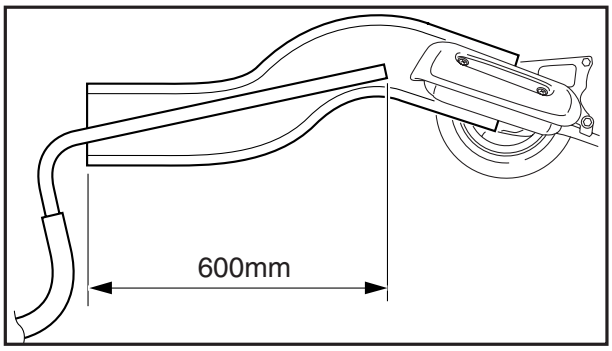
4. Measure:
 - engine idling speed
 Out of specification → Adjust.
 Refer to "ADJUSTING THE ENGINE IDLING SPEED"

Engine idling speed
2000 ~ 2400 r/min



5. Install:
 - carbon monoxide and hydrocarbon tester①.
 - sampling probe②.
 - engine tachometer③.





NOTE:

- Since it is necessary to insert the sampling probe 600mm into the exhaust pipe, be sure to use a heat-resisant rubber tube as shown in the illustration.
- Be sure to set the heat-resistant rubber tube so that exhaust gas does not leak out.
- Before using the carbon monoxide and hydrocarbon tester, be sure to read the user,s manual.

6. Measure:
 - carbon monoxide density
 - hydrocarbon density

Carbon monoxide density (when air induction system is operating)
3.5% below
hydrocarbon density (when air induction system is operating)
1000ppm below

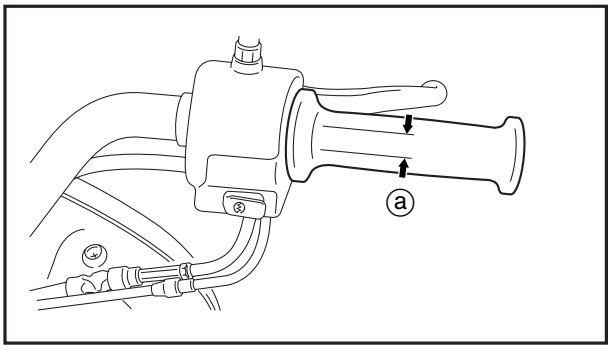
Out of specification → Check air induction system.
Refer to “AIR INDUCTION SYSTEM” in chapter 7.

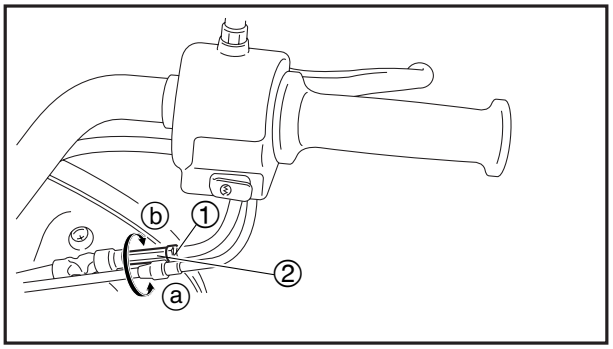
EAS00057

ADJUSTING THE THROTTLE CABLE FREE PLAY

NOTE:

Prior to adjusting the throttle cable free play, the engine idling speed should be adjusted properly.





1. Check:
 - throttle cable free play ⓐ
 Out of specification → Adjust.

Throttle cable free play (at the flange of the throttle grip)
1.5 ~ 3.5 mm (0.059 ~ 0.138 in)

2. Adjust:
 - throttle cable free play

Handlebar side

a. Loosen the locknut ①.
b. Turn the adjusting nut ② in direction ⓐ or ⓑ until the specified throttle cable free play is obtained.

Direction ⓐ	Throttle cable free play is increased.
Direction ⓑ	Throttle cable free play is decreased.

c. Tighten the locknut.

⚠WARNING

After adjusting the throttle cable free play, start the engine and turn the handlebar to the right and to the left to ensure that this does not cause the engine idling speed to change.

EAS00060
CHECKING THE SPARK PLUG

1. Remove:
 - battery cover
 - battery holder

 Refer to “COVER AND PANEL”.
2. Disconnect:
 - spark plug cap
3. Remove:
 - spark plug

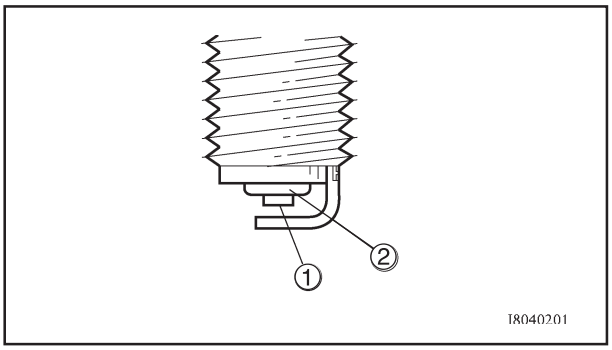
CAUTION:

Before removing the spark plug, blow away any dirt accumulated in the spark plug well with compressed air to prevent it from falling into the cylinder.

4. Check:
 - spark plug type

 Incorrect → Change.

Spark plug type (manufacturer)
CR7E (NGK)



5. Check:
 - electrode ①

 Damage/wear → Replace the spark plug.
 - insulator ②

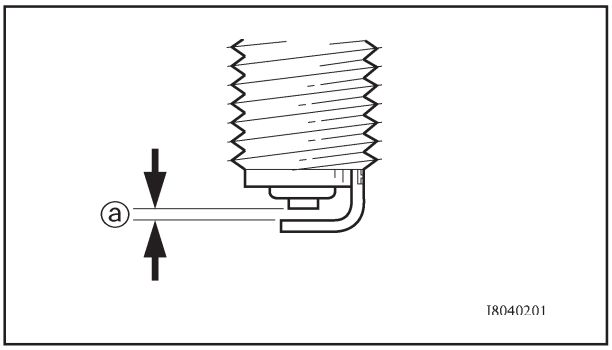
 Abnormal color → Replace the spark plug.

 Normal color is medium-to-light tan.
6. Clean:
 - spark plug

 (with a spark plug cleaner or wire brush)
7. Measure:
 - spark plug gap ⓐ

 (with a wire Thickness gauge)

 Out of specification → Regap.



Spark plug gap
0.7 ~ 0.8 mm (0.028 ~ 0.032 in)

8. Install:
 - spark plug

12.5 Nm (1.25 m • kg, 9 ft • lb)

NOTE:

Before installing the spark plug, clean the spark plug and gasket surface.

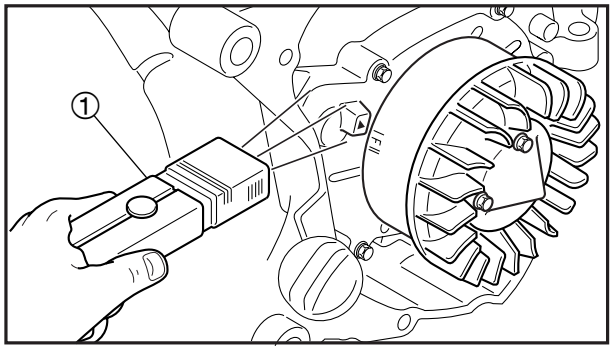
9. Connect:
 - spark plug cap
10. Install:
 - battery holder
 - battery cover

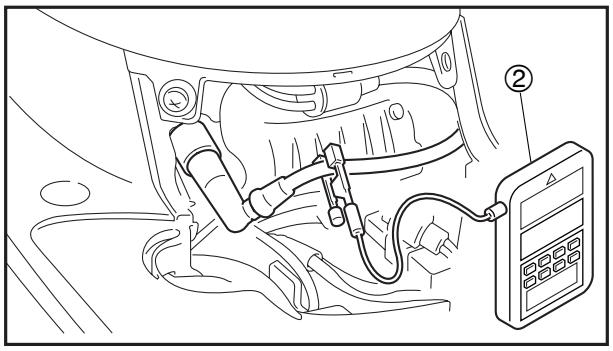
 Refer to “COVER AND PANEL”.

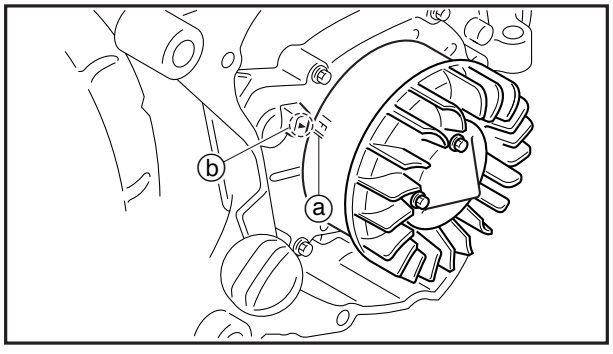
EAS00062
CHECKING THE IGNITION TIMING

NOTE:
Prior to checking the ignition timing, check the wiring connections of the entire ignition system. Make sure all connections are tight and free of corrosion.

1. Drain:
 - coolant
 (completely from the radiator)
2. Remove:
 - radiator cover
 - radiator
 - fan case
 Refer to “RADIATOR”in chapter 6.







3. Attach:
 - timing light ①
 - engine tachometer ②
 (onto the spark plug lead of cylinder)

Timing light
90890-03141
YU-03141
Engine tachometer
90890-03113
YU-08036-C

4. Check:
 - ignition timing

a. Start the engine, warm it up for several minutes, and then let it run at the specified engine idling speed.

Engine idling speed
2000 ~ 2400 r/min

b. Check that the mark ⓐ on the AC magneto rotor is within the firing range ⓑ on the right crankcase cover.
 Incorrect firing range → Check the ignition system.

NOTE:
The ignition timing is not adjustable.

5. Remove:
 - timing light
 - engine tachometer
6. Install:
 - fan case
 - radiator
 - radiator cover

 Refer to “RADIATOR”in chapter 6.
7. Fill:
 - cooling system

 (with the specified amount of the recommended coolant)
 Refer to “CHANGING THE COOLANT”.

EAS00067

MEASURING THE COMPRESSION PRESSURE

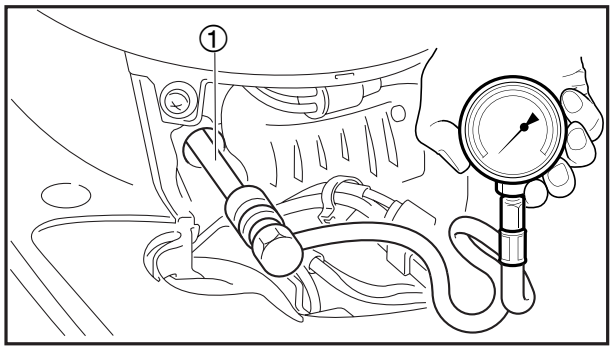
NOTE:

Insufficient compression pressure will result in a loss of performance.

1. Measure:
 - ●valve clearance
 Out of specification → Adjust
 Refer to “ADJUSTING THE VALVE CLEARANCE”.
2. Start the engine, warm it up for several minutes, and then turn it off.
3. Remove:
 - ●battery cover
 - ●battery holder
 Refer to “COVER AND PANEL”.
4. Disconnect:
 - ●spark plug cap
5. Remove:
 - ●spark plug

CAUTION:

Before removing the spark plug, use compressed air to blow away any dirt accumulated in the spark plug well to prevent it from falling into the cylinder.



6. Install:
 - ●compression gauge ①



Compression gauge
90890-03081
YU-33223

7. Measure:
 - ●compression pressure
 Out of specification → Refer to steps (c) and (d).

Compression pressure (at sea level)
Minimum
1262 kPa (12.6 kgf/cm², 700r/min)
Standard
1450 kPa (14.5 kgf/cm², 700r/min)
Maximum
1624 kPa (16.2 kgf/cm², 700r/min)

a. Set the main switch to "ON".
b. With the throttle wide open, crank the engine until the reading on the compression gauge stabilizes.

⚠WARNING

To prevent sparking, ground the spark plug lead before cranking the engine.

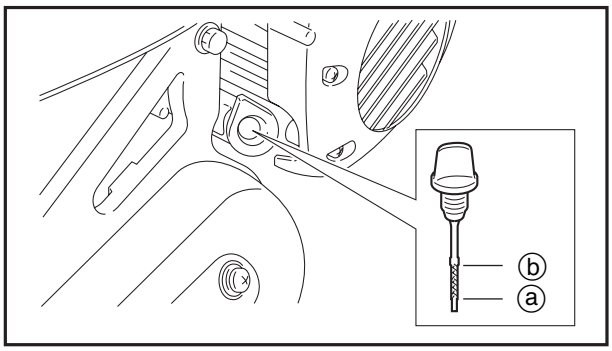
c. If the compression pressure is above the maximum specification, check the cylinder head, valve surfaces, and piston crown for carbon deposits.
Carbon deposits → Eliminate.
d. If the compression pressure is below the minimum specification, pour a teaspoonful engine of oil into the spark plug bore and measure again.
Refer to the following table.

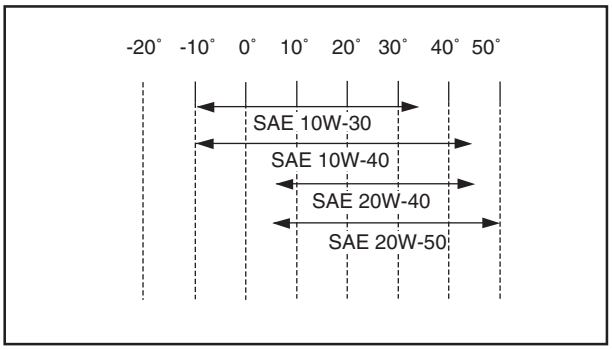
Compression pressure (with oil applied into the cylinder)	
Reading	Diagnosis
Higher than without oil	Piston ring(s) wear or damage → Repair.
Same as without oil	Piston ring(s), valves, cylinder head gasket or piston possibly defective → Repair.

8. Remove:
● compression gauge
9. Install:
● spark plug

12.5 Nm (1.25 m • kg 9.0 ft • lb)

10. Connect:
● spark plug cap
11. Install:
● battery holder
● battery cover
Refer to "COVER AND PANEL".





EAS00069
CHECKING THE ENGINE OIL LEVEL

1. Stand the scooter on a level surface.

NOTE:
- Place the scooter on a suitable stand.
- Make sure the scooter is upright.

2. Start the engine, warm it up for several minutes, and then turn it off.
3. Check:
 - engine oil level
 The engine oil level should be between the minimum level mark ⓐ and maximum level mark ⓑ.
 Below the minimum level mark → Add the recommended engine oil to the proper level.

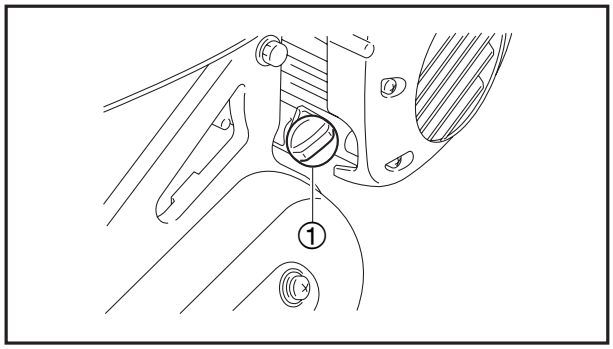
Recommended oil
Refer to the chart for the engine oil grade which is best suited for certain atmospheric temperatures.
API standard
SE or higher grade

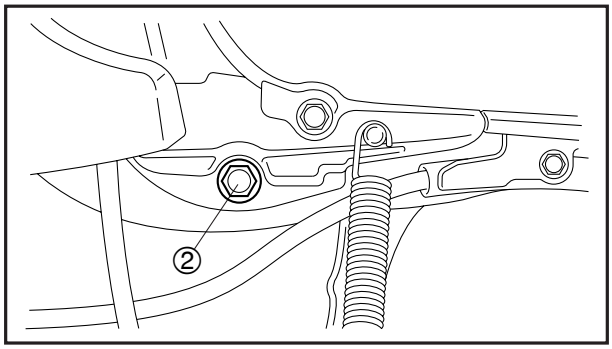
CAUTION:
- **Do not allow foreign materials to enter the crankcase.**

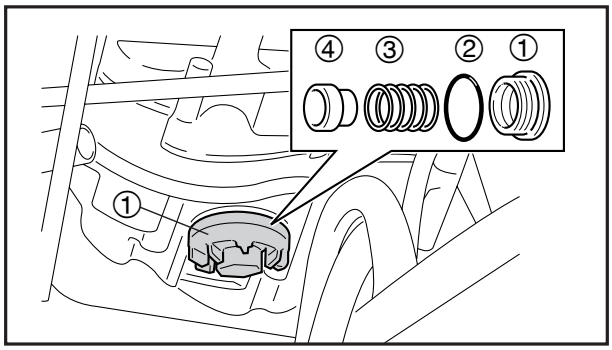
NOTE:
Before checking the engine oil level, wait a few minutes until the oil has settled.

4. Start the engine, warm it up for several minutes, and then turn it off.
5. Check the engine oil level again.

NOTE:
Before checking the engine oil level, wait a few minutes until the oil has settled.







EAS00076

CHANGING THE ENGINE OIL

1. Start the engine, warm it up for several minutes, and then turn it off.
2. Place a container under the engine oil drain bolt.
3. Remove:
 - engine oil filler cap ①
 - engine oil drain bolt ②
 (along with the gasket)
4. Drain:
 - engine oil
 (completely from the crankcase)
5. If the oil filter element is also to be cleaned, perform the following procedure.

a. Remove the oil strainer cover ①, spring③ and oil filter element ④.
b. Replace the o-ring ②.
c. Install the oil strainer cover.

	Oil strainer cover **32 Nm (3.2 m • kg, 23.1 ft • lb)**

6. Install:
 - engine oil drain bolt
 (along with the gasket)

	23 Nm (2.3 m • kg, 16.6 ft • lb)

7. Fill:
 - crankcase
 (with the specified amount of the recommended engine oil)

	Quantity **Total amount** **0.8~0.9L (0.74~0.83 Imp qt, 0.87~0.98 US qt)** **Periodic oil change** **0.73~0.83 L (0.67~0.76 Imp qt, 0.80~0.90 US qt)**

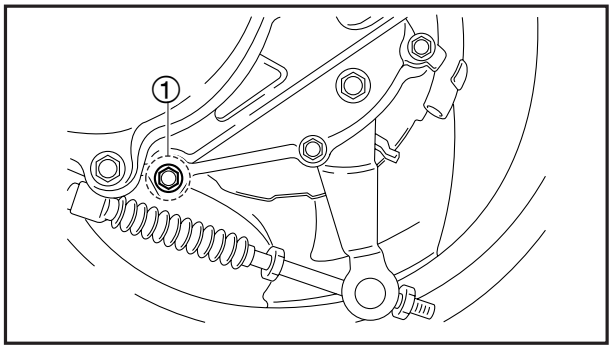
8. Install:
 - engine oil filler cap
9. Start the engine, warm it up for several minutes, and then turn it off.
10. Check:
 - engine
 (for engine oil leaks)
11. Check:
 - engine oil level
 Refer to “CHECKING THE ENGINE OIL LEVEL”.
12. Check:
 - engine oil pressure
 Refer to “CHECKING THE ENGINE OIL PRESSURE”.

CHANGING THE TRANSMISSION OIL

1. Stand the scooter on a level surface.

NOTE:
- Stand the scooter on a suitable stand.
- Make sure that the scooter up right.

2. Start the engine, warm it up for several minutes, and then turn it off.
3. Place a container under the transmission.



4 Remove:
- ●transmission oil drain bolt ①
- ●transmission oil fill bolt

Completely drain the transmission oil.

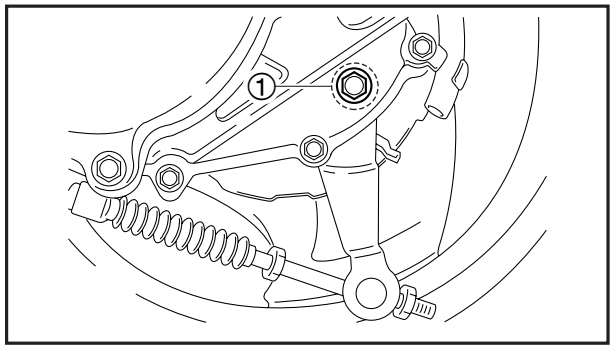
5 Install:
- ●transmission oil drain bolt

13 Nm (1.3 m • kg, 9.4 ft • lb)

6. Fill:
- ●transmission oil

(with the specified amount of the recommended transmission oil)

Total amount
0.11~0.13L (0.10~0.12 Imp qt, 0.12~0.14 US qt)
Periodic oil change
0.09~0.11L (0.08~0.10 Imp qt, 0.10~0.12 US qt)
Recommended oil
SAE10W30



7. Install:
- ●transmission oil fill bolt①

(along with the gasket)

23 Nm (2.3 m • kg, 16.6 ft • lb)

8. Start the engine for several minutes to warm it up and check for the oil leakage.

EAS00077

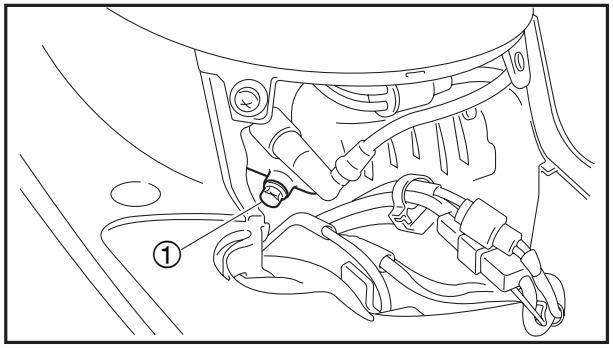
MEASURING THE ENGINE OIL PRESSURE

1. Check:
 - engine oil level
 Below the minimum level mark → Add the recommended engine oil to the proper level.
 Refer to “CHECKING THE ENGINE OIL LEVEL”.
2. Start the engine, warm it up for several minutes, and then turn it off.

CAUTION:

When the engine is cold, the engine oil will have a higher viscosity, causing the engine oil pressure to increase. Therefore, be sure to measure the engine oil pressure after warming up the engine.

3. Remove:
 - seat/trunk
 - battery cover
 - front cover
 Refer to “COVER AND PANEL”.



4. Lossen:
 - gallery bolt ①

⚠WARNING

The engine, muffler and engine oil are extremely hot.

5. Check:
 - engine oil pressure

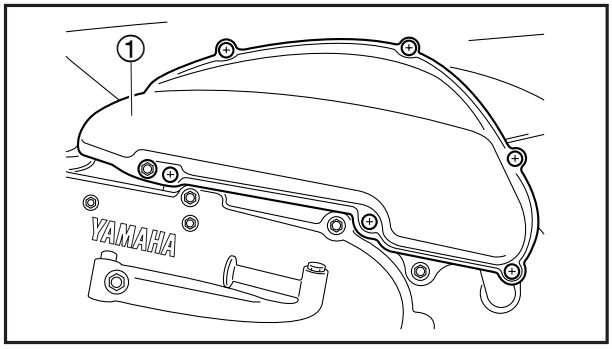
a. Start the engine and keep it idling until engine oil starts to seep from the oil gallery bolt. If no engine oil comes out after one minute, turn the engine off so that it will not seize.
b. Check the engine oil passages, the oil filter and oil pump for damage or leakage.Refer to”OIL PUMP” in chapter 5.
c. Start the engine after solving the problem(s) and check the engine oil pressure again.

6. Install:
 - gallery bolt

	7 Nm (0.7 m • kg, 5.1 ft • lb)

7. Install:
 - front cover
 - battery cover
 - seat/trunk

 Refer to “COVER AND PANEL”.



EAS00086

CHECKING THE AIR FILTER ELEMENT

1. Remove:
 - air filter case cover ①
 - air filter element
2. Check:
 - air filter element
 Damage/dirty → Replace.
3. Install:
 - air filter element
 - air filter case cover

	10 Nm (1.0 m • kg, 7.2 ft • lb)

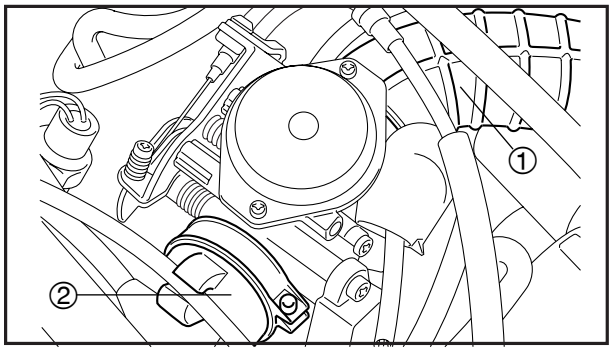
CAUTION:

Never operate the engine without the air filter element installed. Unfiltered air will cause rapid wear of engine parts and may damage the engine. Operating the engine without the air filter element will also affect the carburetor tuning, leading to poor engine performance and possible overheating.

NOTE:

When installing the air filter element into the air filter case cover, make sure their sealing surfaces are aligned to prevent any air leaks.

EAS00094
CHECKING THE CARBURETOR JOINT AND INTAKE MANIFOLD



1. Remove:
 - seat/trunk
 - rear carrier
 - battery cover
 - front cover
 - side cover (left and right)
 - rear cover

 Refer to “COVER AND PANEL”.
2. Check:
 - carburetor joint ①
 - intake manifold ②

 Cracks/damage → Replace.
 Refer to “CARBURETOR” in chapter 7.
3. Install:
 - rear cover
 - side cover (left and right)
 - front cover
 - battery cover
 - rear carrier
 - seat/trunk

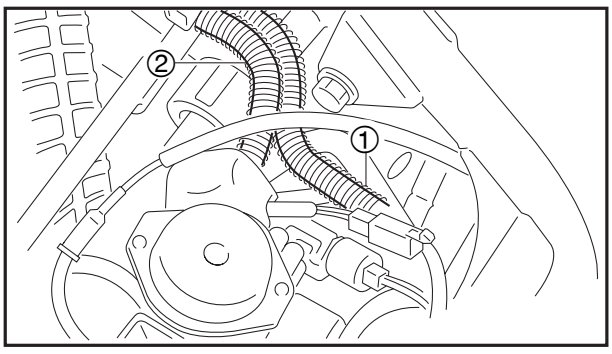
 Refer to “COVER AND PANEL”.

EAS00096
CHECKING THE FUEL AND VACUUM HOSES

The following procedure applies to all of the fuel and vacuum hoses.

1. Remove:
 - seat/trunk

 Refer to “COVER AND PANEL”.



2. Check:
 - vacuum hose ①
 - fuel hose ②

 Cracks/damage → Replace.
 Loose connection → Connect properly.
3. Install:
 - seat/trunk

 Refer to “COVER AND PANEL”.

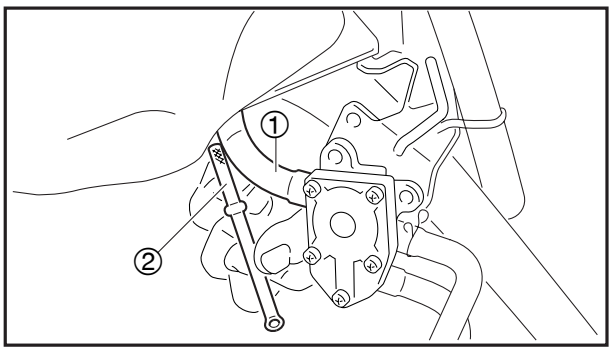
EAS00097

CHECKING THE FUEL HOSES AND FUEL FILTER

The following procedure applies to all of the fuel hoses.

1. Remove:
 - ●battery cover
 - ●seat/trunk
 - ●rear carrier
 - ●front cover
 - ●side cover (left and right)
 - ●rear cover

 Refer to “COVER AND PANEL”.



2. Check:
 - ●fuel hose ①

 Cracks/damage → Replace.
 - ●fuel filter ②

 Contaminants/damage → Replace.

NOTE:

- Drain and flush the fuel tank if abrasive damage to any components of the fuel line is evident.
- The arrow mark on the fuel filter must point towards the fuel cock as shown.

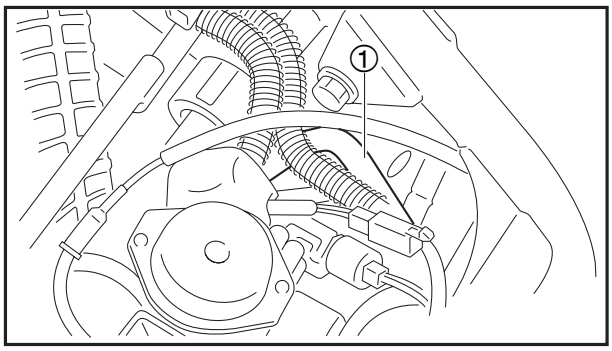
3. Install:
 - ●rear cover
 - ●side cover (left and right)
 - ●front cover
 - ●rear carrier
 - ●seat/trunk
 - ●battery cover

 Refer to “COVER AND PANEL”.

EAS00098

CHECKING THE CRANKCASE BREATHER HOSE

1. Remove:
 - seat/trunk
 Refer to “COVER AND PANEL”.



2. Check:
 - crankcase breather hose ①
 Cracks/damage → Replace.
 Loose connection → Connect properly.

CAUTION:

Make sure the crankcase breather hose is routed correctly.

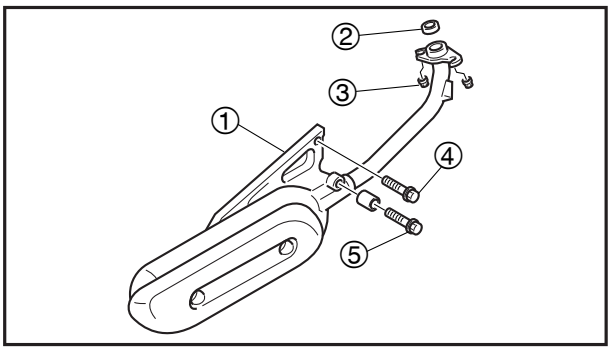
3. Install:
 - seat/trunk
 Refer to “COVER AND PANEL”.

EAS00099

CHECKING THE EXHAUST SYSTEM

The following procedure applies to all of the muffler assembly and gaskets.

1. Remove:
 - muffler assembly
 Refer to "MANIFOLD, AIR FILTER AND MUFFLER ASSEMBLY" in chapter 5.

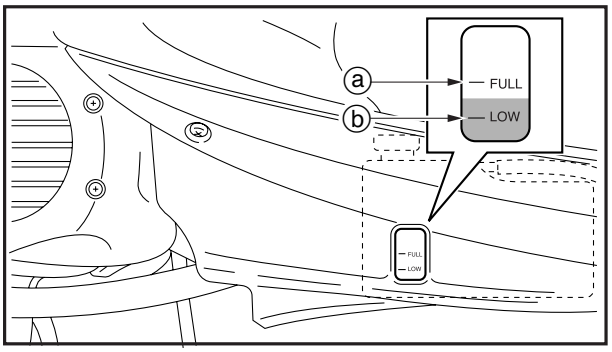


2 . Check:
 - muffler assembly ①
 Cracks/damage → Replace.
 - gasket ②
 Exhaust gas leaks → Replace.

3 . Check:
 - tightening torque

Muffler assembly nut ③
13 Nm (1.3 m • kg, 9.4 ft • lb)
Muffler and rear arm bolt ④
31 Nm (3.1 m • kg, 22.4 ft • lb)
Muffler and rear arm bolt ⑤
31 Nm (3.1 m • kg, 22.4 ft • lb)

4. Install:
 - muffler assembly
 Refer to "MANIFOLD, AIR FILTER AND MUFFLER ASSEMBLY" in chapter 5.



EAS00103

CHECKING THE COOLANT LEVEL

1. Stand the scooter on a level surface.

NOTE:
- Place the scooter on a suitable stand.
- Make sure the scooter is upright.

2. Remove:
 - mat
 - battery cover

 Refer to “COVER AND PANEL”.
3. Check:
 - coolant level

 The coolant level should be between the maximum level mark ⓐ and minimum level mark ⓑ.

 Below the minimum level mark → Add the recommended coolant to the proper level.

CAUTION:
- **Adding water instead of coolant lowers the antifreeze content of the coolant. If water is used instead of coolant check, and if necessary, correct the antifreeze concentration of the coolant.**
- **Use only distilled water. However, if distilled water is not available, soft water may be used.**

4. Start the engine, warm it up for several minutes, and then turn it off.
5. Check:
 - coolant level

NOTE:
Before checking the coolant level, wait a few minutes until it settles.

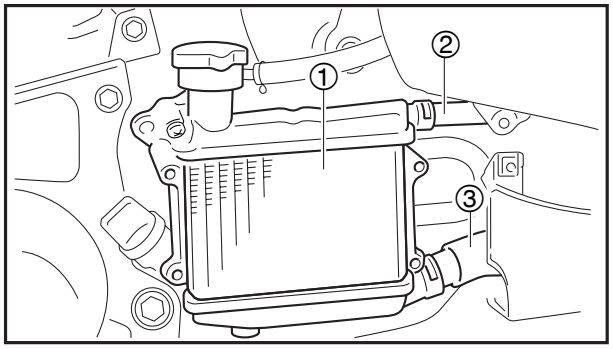
6. Install:
 - battery cover
 - mat

 Refer to “COVER AND PANEL”.

EAS00104

CHECKING THE COOLING SYSTEM

1. Remove:
 - seat/trunk
 - battery cover
 - front cover
 - battery holder/ battery
 - footrest board side cover mole(left and right)
 - mat/footrest board
 Refer to “COVER AND PANEL”.
 - radiator cover
 Refer to “COOLING SYSTEM”in chapter 6.

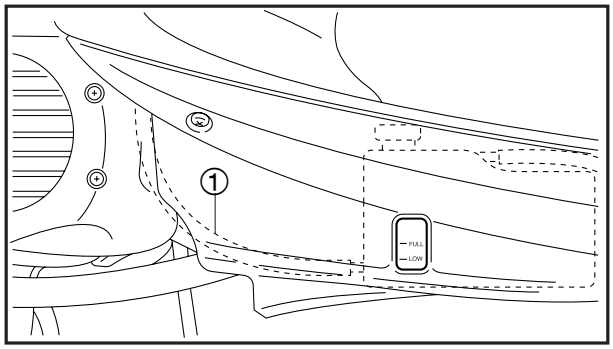


2. Check:
 - radiator ①
 - radiator inlet hose ②
 - radiator outlet hose ③
 Cracks/damage → Replace.
 Refer to “COOLING SYSTEM” in chapter 6.
3. Install:
 - radiator cover
 Refer to “COOLING SYSTEM”in chapter 6.
 - mat/footrest board
 - footrest board side cover mole(left and right)
 - battery holder/ battery
 - front cover
 - battery cover
 - seat/trunk
 Refer to “COVER AND PANEL”.

EAS00105

CHANGING THE COOLANT

1. Remove:
 - mat
 - battery cover
 - footrest board side cover mole (right)
 Refer to “COVER AND PANEL”.
 - radiator cover
 Refer to “COOLING SYSTEM”in chapter 6.



2. Disconnect:
 - coolant reservoir hose ①
3. Drain:
 - coolant
 (from the coolant reservoir)
 - coolant
 (from the radiator under drain bolt)
4. Remove:
 - radiator cap

⚠WARNING

A hot radiator is under pressure. Therefore, do not remove the radiator cap when the engine is hot. Scalding hot fluid and steam may be blown out, which could cause serious injury. When the engine has cooled, open the radiator cap as follows:
Place a thick rag or a towel over the radiator cap and slowly turn the radiator cap counterclockwise toward the detent to allow any residual pressure to escape. When the hissing sound has stopped, press down on the radiator cap and turn it counterclockwise to remove.

The following procedure applies to all of the coolant drain bolts and copper washers.

5. Connect:
 - coolant reservoir hose
6. Install:
 - radiator under drain bolt

	2 Nm (0.2 m • kg, 1.5 ft • lb)

7. Fill:
 - cooling system
 (with the specified amount of the recommended coolant)



Recommended antifreeze
High-quality ethylene glycol antifreeze containing corrosion inhibitors for aluminum engines
Mixing ratio
1:1 (antifreeze:water)
Quantity
Total amount
0.52 L (0.48 Imp qt, 0.57 US qt)
Coolant reservoir capacity
0.26 L (0.24 Imp qt, 0.28 US qt)
From minimum to maximum level mark
0.10~0.25 L (0.09~0.14 Imp qt, 0.11~0.16 US qt)

Handling notes for coolant
Coolant is potentially harmful and should be handled with special care.

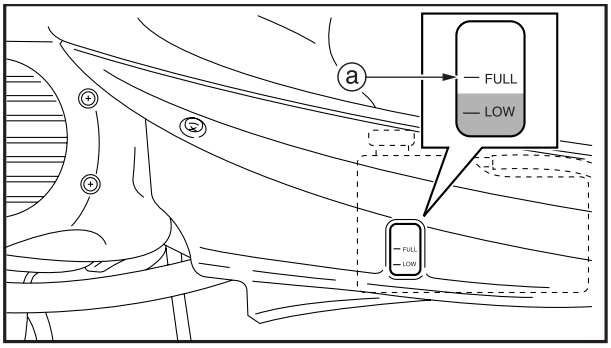
⚠WARNING

- **If coolant splashes in your eyes, thoroughly wash them with water and consult a doctor.**
- **If coolant splashes on your clothes, quickly wash it away with water and then with soap and water.**
- **If coolant is swallowed, induce vomiting and get immediate medical attention.**

CAUTION:

- **Adding water instead of coolant lowers the antifreeze content of the coolant. If water is used instead of coolant check, and if necessary, correct the antifreeze concentration of the coolant.**
- **Use only distilled water. However, if distilled water is not available, soft water may be used.**
- **If coolant comes into contact with painted surfaces, immediately wash them with water.**
- **Do not mix different types of antifreeze.**

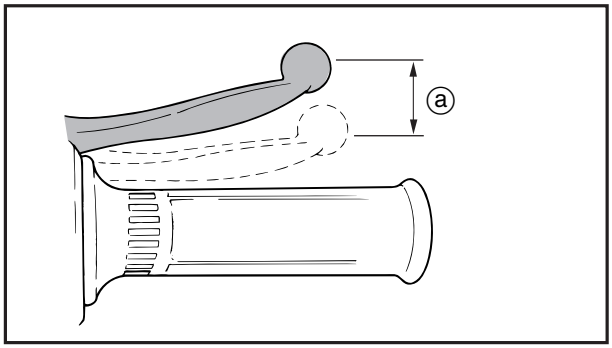
8. Install:
 - radiator cap

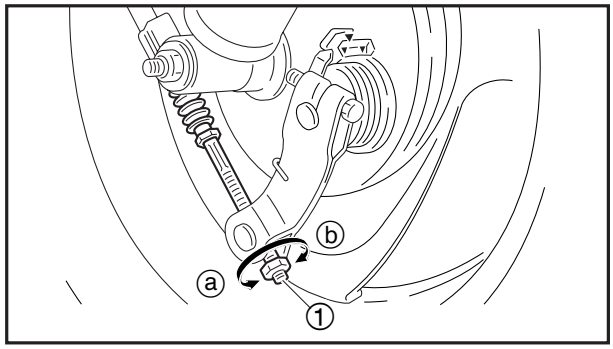


9. Fill:
 - coolant reservoir
 (with the recommended coolant to the maximum level mark ⓐ)
10. Install:
 - coolant reservoir cap
11. Start the engine, warm it up for several minutes, and then stop it.
12. Check:
 - coolant level
 Refer to “CHECKING THE COOLANT LEVEL”.

NOTE:
Before checking the coolant level, wait a few minutes until the coolant has settled.

13. Install:
 - radiator cover
 Refer to “COOLING SYSTEM”in chapter 6.
 - footrest board side cover mole (right)
 - battery cover
 - mat
 Refer to “COVER AND PANEL”.





EAS00109

CHASSIS

ADJUSTING THE FRONT BRAKE

1. Check:
 - brake lever free play ⓐ
 Out of specification → Adjust.

Brake lever free play (at the end of the brake lever)
10 ~ 20 mm (0.394 ~ 0.787 in)

2. Adjust:
 - brake lever free play

a. Turn the adjusting nut ① in direction ⓐ or ⓑ until the specified brake lever free play is obtained.

Direction ⓐ	Brake lever free play is increased.
Direction ⓑ	Brake lever free play is decreased.

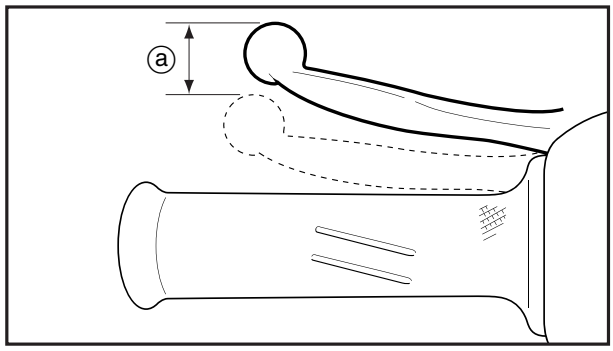
CAUTION:

After adjusting the brake lever free play, make sure there is no brake drag.

EAS00114

ADJUSTING THE REAR BRAKE

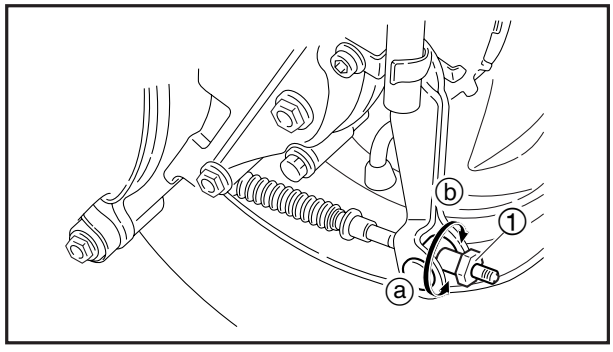
1. Check:
 - brake lever free play ⓐ
 Out of specification → Adjust.



Brake lever free play
10 ~ 20 mm (0.394 ~ 0.787 in)

2. Adjust:
 - brake lever free play

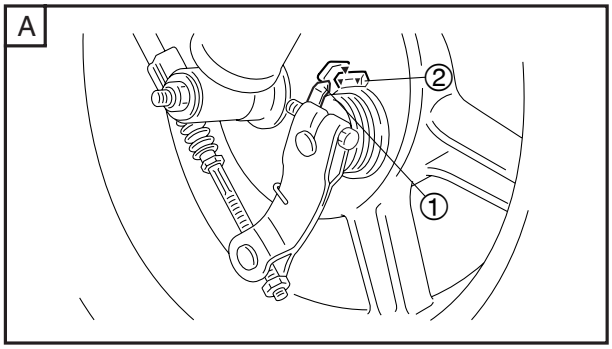
a. Turn the adjusting nut ① in direction ⓐ or ⓑ until the specified brake lever free play is obtained.

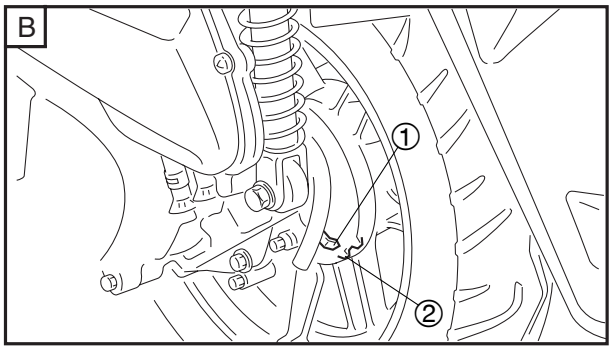


Direction ⓐ	Brake lever free play is increased.
Direction ⓑ	Brake lever free play is decreased.

CAUTION:

After adjusting the brake lever free play, make sure there is no brake drag.





EAS00127

CHECKING THE FRONT AND REAR BRAKE SHOES

1. Operate the brake.
2. Check:
 - wear indicator ①
 Reaches the wear limit line ② → Replace the brake shoes as a set.
 Refer to “FRONT WHEEL AND FRONT BRAKE” and “REAR WHEEL AND REAR BRAKE” in chapter 4.

A Front brake
B Rear brake

EAS00148

CHECKING AND ADJUSTING THE STEERING HEAD

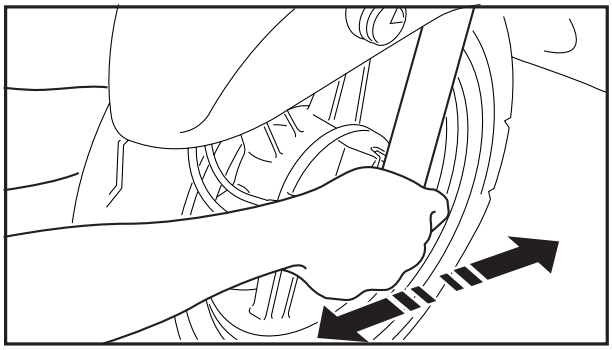
1. Stand the scooter on a level surface.

⚠WARNING

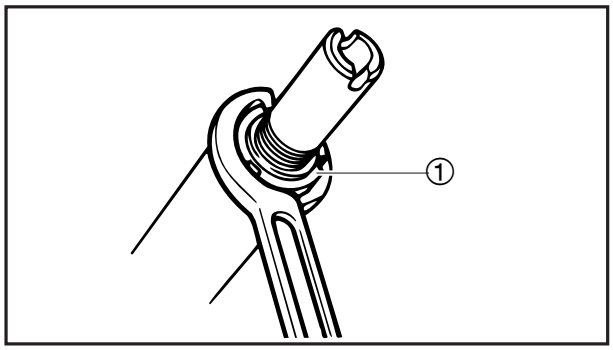
Securely support the scooter so that there is no danger of it falling over.

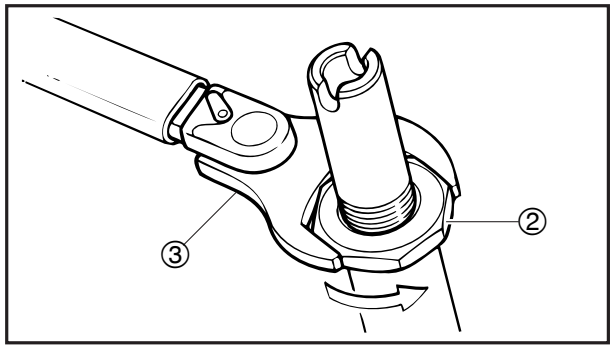
NOTE:

Place the scooter on a suitable stand so that the front wheel is elevated.



2. Check:
 - steering head
 Grasp the bottom of the front fork legs and gently rock the front fork.
 Binding/looseness → Adjust the steering head.
3. Remove:
 - head light cover
 - leg shield 1
 Refer to “COVER AND PANEL”.





4. Adjust:
 - steering head

a. Remove the upper cover .
b. Loosen the steering nut ① and then tighten it to specification with the steering nut wrench.

NOTE:

Set the torque wrench at a right angle to the steering nut wrench.



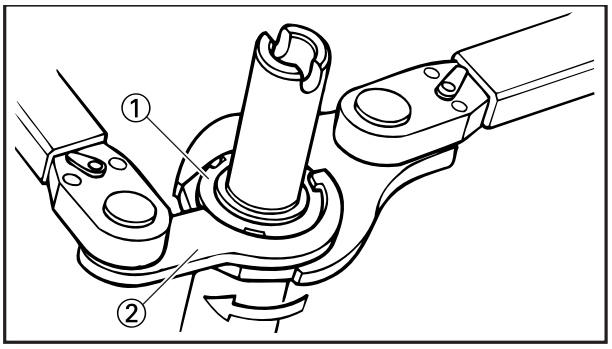
Steering nut wrench
90890-01268
YU-01268

c. Loosen the upper bearing inner race② completely and then tighten it to specification with a steering nut wrench③ .

⚠WARNING

Do not overtighten the upper bearing inner race.

	Upper bearing inner race(final tightening torque) **7 Nm (0.7 m • kg, 5.1 ft • lb)**



d. Check the steering head for looseness or binding by turning the front fork all the way in both directions. If any binding is felt, remove the upper cover and check the bearing race.

Refer to “STEERING HEAD” in chapter 4.

e. Hold the upper bearing inner race with a steering nut wrench and tighten the steering nut① with a steering nut wrench②.

	Steering nut wrench **90890-01403** **YU-A9472**

	Steering nut **30 Nm (3.0 m • kg, 21.7 ft • lb)**

5. Install:
 - leg shield 1
 - head light cover

 Refer to “COVER AND PANEL”.

EAS00151

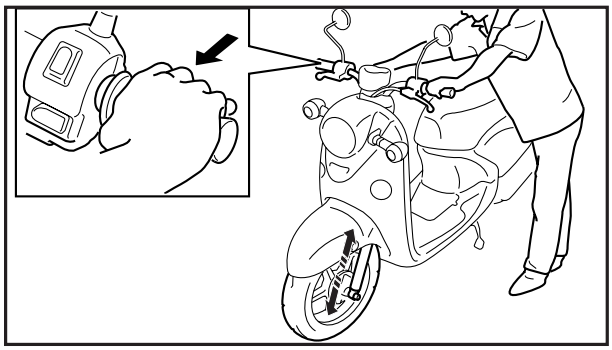
CHECKING THE FRONT FORK

1. Stand the scooter on a level surface.

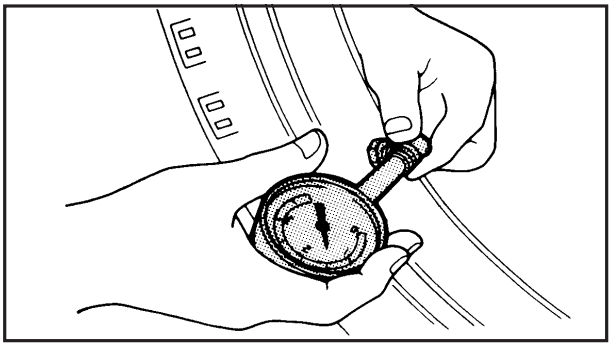
⚠ WARNING

Securely support the scooter so that there is no danger of it falling over.

2. Check:
 - inner tube
 Damage/scratches → Replace.
 - dust seal
 Damage/scratches → Replace.
3. Hold the scooter upright and apply the front brake.



4. Check:
 - front fork operation
 Push down hard on the handlebar several times and check if the front fork rebounds smoothly.
 Rough movement → Repair.
 Refer to “FRONT FORK” in chapter 4.



EAS00163

CHECKING THE TIRES

The following procedure applies to both of the tires.

1. Check:
 - tire pressure
 Out of specification → Regulate.

⚠ WARNING

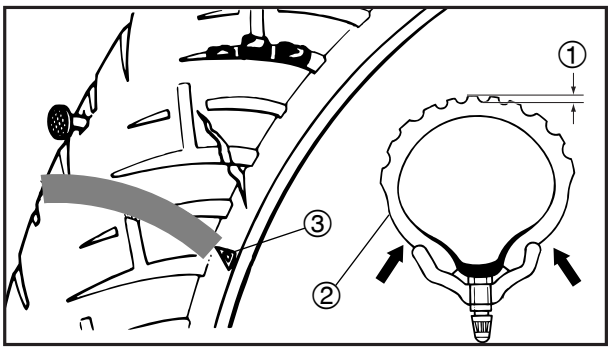
- **The tire pressure should only be checked and regulated when the tire temperature equals the ambient air temperature.**
- **The tire pressure and the suspension must be adjusted according to the total weight (including cargo, rider, passenger and accessories) and the anticipated riding speed.**
- **Operation of an overloaded scooter could cause tire damage, an accident or an injury.**
- **NEVER OVERLOAD THE SCOOTER.**

Basic weight (with oil and a full fuel tank)	81 kg (179 lb)	
Maximum load*	158 kg (348 lb)	
Cold tire pressure	Front	Rear
Up to 55 kg	150 kPa (1.5 kgf/cm², 22 psi)	175 kPa (1.75 kgf/cm², 25 psi)
55 kg ~ 158 kg	150 kPa (1.5 kgf/cm², 22 psi)	175 kPa (1.75 kgf/cm², 25 psi)

* Total weight of rider, passenger, cargo and accessories

⚠ WARNING

It is dangerous to ride with a worn-out tire. When the tire tread reaches the wear limit, replace the tire immediately.



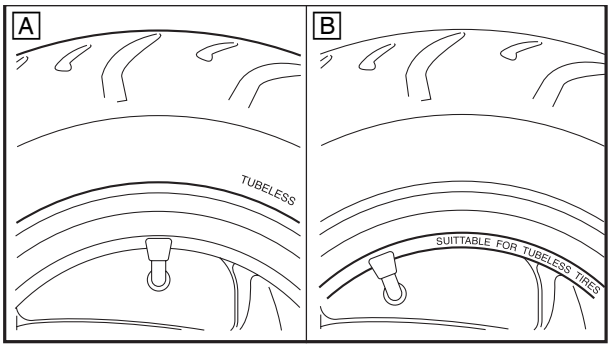
2. Check:
 ●tire surfaces
 Damage/wear → Replace the tire.

Minimum tire tread depth
0.8 mm (0.032 in)

① Tire tread depth
② Sidewall
③ Wear indicator

⚠WARNING

- **Do not use a tubeless tire on a wheel designed only for tube tires to avoid tire failure and personal injury from sudden deflation.**
- **When using tube tires, be sure to install the correct tube.**
- **Always replace a new tube tire and a new tube as a set.**
- **To avoid pinching the tube, make sure the wheel rim band and tube are centered in the wheel groove.**
- **Patching a punctured tube is not recommended. If it is absolutely necessary to do so, use great care and replace the tube as soon as possible with a good quality replacement.**



A Tire
B Wheel

Tube wheel	Tube tire only
Tubeless wheel	Tube or tubeless tire

- **After extensive tests, the tires listed below have been approved by Yamaha Motor Taiwan Co., Ltd. for this model. The front and rear tires should always be by the same manufacturer and of the same design. No guarantee concerning handling characteristics can be given if a tire combination other than one approved by Yamaha is used on this scooter.**

Front tire

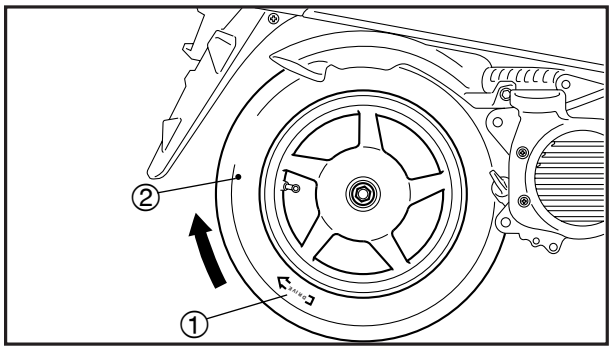
Manufacturer	Model	Size
KENDA	K348A	90/90-10 50J

Rear tire

Manufacturer	Model	Size
KENDA	K348A	90/90-10 50J

⚠WARNING

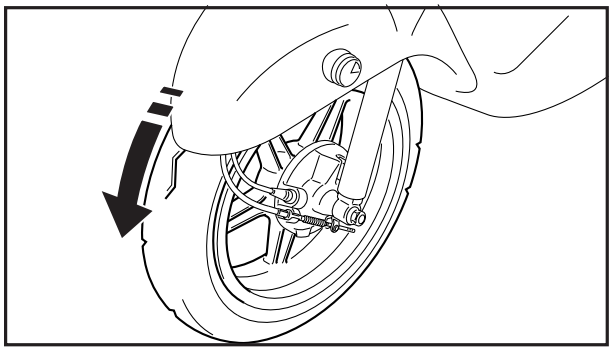
New tires have a relatively low grip on the road surface until they have been slightly worn. Therefore, approximately 100 km should be traveled at normal speed before any high-speed riding is done.

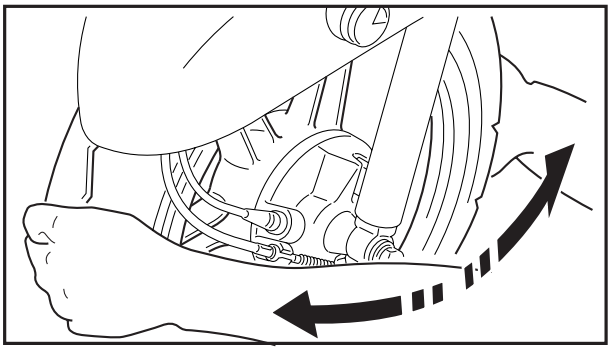


NOTE:

For tires with a direction of rotation mark ①:

- Install the tire with the mark pointing in the direction of wheel rotation.
- Align the mark ② with the valve installation point.





EAS00168
CHECKING THE WHEELS

The following procedure applies to both of the wheels.

1. Check:
 - wheel
 Damage/out-of-round → Replace.

⚠ WARNING

Never attempt to make any repairs to the wheel.

NOTE:

After a tire or wheel has been changed or replaced, always balance the wheel.

EAS00170
CHECKING AND LUBRICATING THE CABLES

The following procedure applies to all of the inner and outer cables.

⚠ WARNING

Damaged outer cable may cause the cable to corrode and interfere with its movement. Replace damaged outer cable and inner cables as soon as possible.

1. Check:
 - outer cable
 Damage → Replace.
2. Check:
 - cable operation
 Rough movement → Lubricate.

Recommended lubricant
Engine oil or a suitable cable lubricant

NOTE:

Hold the cable end upright and pour a few drops of lubricant into the cable sheath or use a suitable lubricating device.

EAS00171

LUBRICATING THE LEVERS AND PEDALS

Lubricate the pivoting point and metal-to-metal moving parts of the levers and pedals.

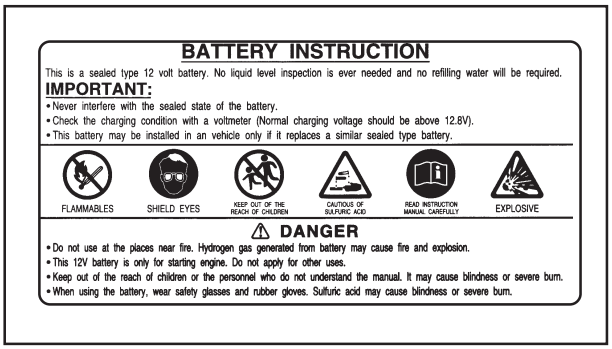
	Recommended lubricant **Lithium-soap-based grease**

EAS00173

LUBRICATING THE CENTERSTAND

Lubricate the pivoting point and metal-to-metal moving parts of the centerstand.

	Recommended lubricant **Lithium-soap-based grease**



EAS00179

ELECTRICAL SYSTEM

CHECKING AND CHARGING THE BATTERY

⚠WARNING

Batteries generate explosive hydrogen gas and contain electrolyte which is made of poisonous and highly caustic sulfuric acid. Therefore, always follow these preventive measures:

- **Wear protective eye gear when handling or working near batteries.**
- **Charge batteries in a well-ventilated area.**
- **Keep batteries away from fire, sparks or open flames (e.g., welding equipment, lighted cigarettes).**
- **DO NOT SMOKE when charging or handling batteries.**
- **KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.**
- **Avoid bodily contact with electrolyte as it can cause severe burns or permanent eye injury.**

FIRST AID IN CASE OF BODILY CONTACT:
EXTERNAL

- **Skin — Wash with water.**
- **Eyes — Flush with water for 15 minutes and get immediate medical attention.**

INTERNAL

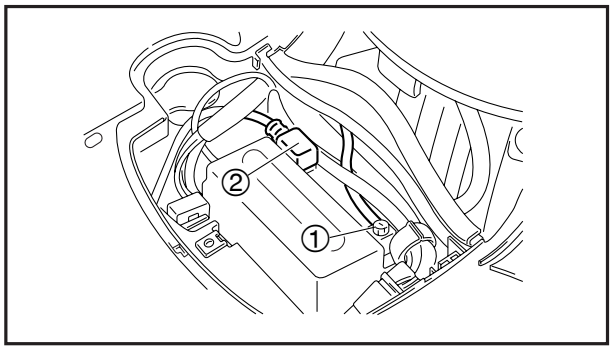
- **Drink large quantities of water or milk followed with milk of magnesia, beaten egg or vegetable oil. Get immediate medical attention.**

CAUTION:

- **This is a sealed battery. Never remove the sealing caps because the balance between cells will not be maintained and battery performance will deteriorate.**
- **Charging time, charging amperage and charging voltage for an MF battery are different from those of conventional batteries. The MF battery should be charged as explained in the charging method illustrations. If the battery is overcharged, the electrolyte level will drop considerably. Therefore, take special care when charging the battery.**

NOTE:
Since MF batteries are sealed, it is not possible to check the charge state of the battery by measuring the specific gravity of the electrolyte. Therefore, the charge of the battery has to be checked by measuring the voltage at the battery terminals.

1. Remove:
 - mat
 - battery cover
 - battery holder
 Refer to “COVER AND PANEL”.



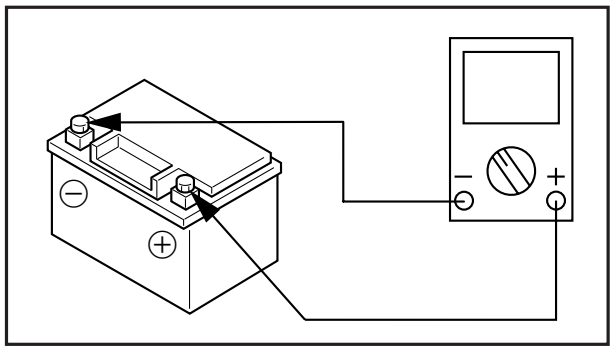
2. Disconnect:
 - battery leads
 (from the battery terminals)

CAUTION:
First, disconnect the negative battery lead ①, and then the positive battery lead ②.

3. Remove:
 - battery

4. Check:
 - battery charge

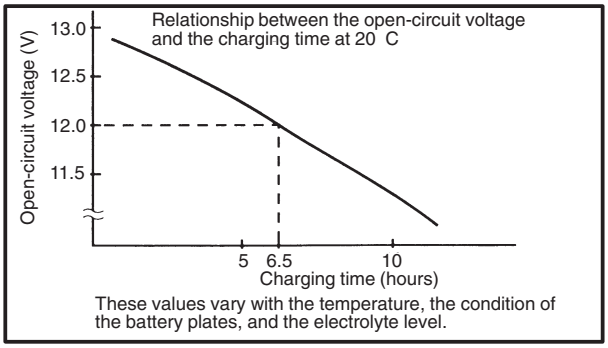
a. Connect a digital pocket tester to the battery terminals.

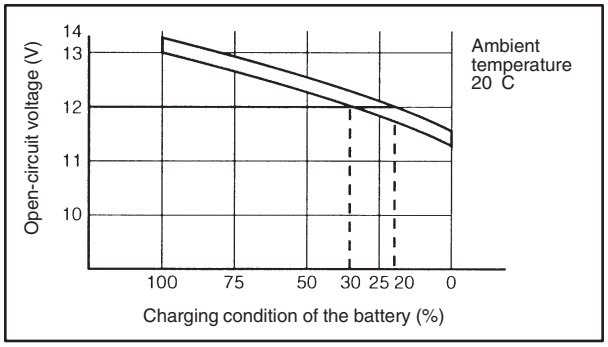


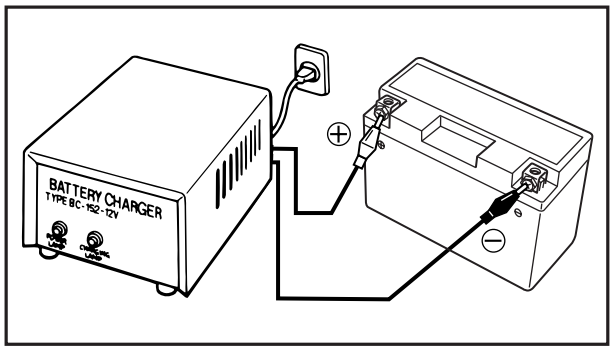
	Pocket tester **90890-03132 (YU-03112-C)**

Positive tester probe → positive battery terminal
Negative tester probe → negative battery terminal

NOTE:
- The charge state of an MF battery can be checked by measuring its open-circuit voltage (i.e., the voltage when the positive terminal is disconnected).
- No charging is necessary when the open-circuit voltage equals or exceeds 12.8 V.







b. Check the charge of the battery, as shown in the charts and the following example.

Example

c. Open-circuit voltage = 12.0 V
d. Charging time = 6.5 hours
e. Charge of the battery = 20 ~ 30%

5. Charge:
 - battery
 (refer to the appropriate charging method illustration)

⚠WARNING

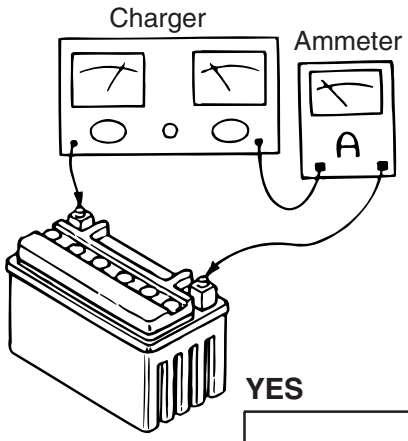
Do not quick charge a battery.

CAUTION:

- **Never remove the MF battery sealing caps.**
- **Do not use a high-rate battery charger since it forces a high-amperage current into the battery quickly and can cause battery overheating and battery plate damage.**
- **If it is impossible to regulate the charging current on the battery charger, be careful not to overcharge the battery.**
- **When charging a battery, be sure to remove it from the scooter. (If charging has to be done with the battery mounted on the scooter, disconnect the negative battery lead from the battery terminal.)**
- **To reduce the chance of sparks, do not plug in the battery charger until the battery charger leads are connected to the battery.**
- **Before removing the battery charger lead clips from the battery terminals, be sure to turn off the battery charger.**

- **Make sure the battery charger lead clips are in full contact with the battery terminal and that they are not shorted. A corroded battery charger lead clip may generate heat in the contact area and a weak clip spring may cause sparks.**
- **If the battery becomes hot to the touch at any time during the charging process, disconnect the battery charger and let the battery cool before reconnecting it. Hot batteries can explode!**
- **As shown in the following illustration, the open-circuit voltage of an MF battery stabilizes about 30 minutes after charging has been completed.Therefore, wait 30 minutes after charging is completed before measuring the open-circuit voltage.**

Charging method using a variable-current (voltage) charger



Measure the open-circuit voltage prior to charging.

NOTE:
Leave the battery unused for more than 30 minutes before measuring its opencircuit voltage.

Connect a charger and ammeter to the battery and start charging.

NOTE:
Set the charging voltage to 16-17 V. (If the charging voltage is lower charging will be insufficient, if it is higher, the battery will be over-charged.)

Is the amperage higher than the standard charging amperage written on the battery?

YES

NO

Adjust the char ging voltage to 20 ~ 25V.

Monitor the amperage for 3 ~ 5 minutes. Is the standard charging amperage exceeded?

YES

NO

Adjust the voltage to obtain the standard charging amperage.

Set the timer to the charging time determined by the opencircuit voltage.
Refer to “CHECKING AND CHARGING THE BATTERY”.

If the amperage does not exceed the standard charging amperage after 5 minutes, replace the battery.

If the required charging time exceeds 5 hours, it is advisable to check the charging amperage after 5 hours. If there is any change in the amperage, readjust the voltage to obtain the standard charging amperage.

Leave the battery unused for more than 30 minutes before measuring its open-circuit voltage.
12.8 V ~ Charging is complete.
12.0 ~ 12.7 V ~ Recharging is required.
Under 12.0 V ~ Replace the battery.

Charging method using a constant voltage charger

Measure the open-circuit voltage prior to charging.

NOTE:
Leave the battery unused for more than 30 minutes before measuring its opencircuit voltage.

Connect a charger and ammeter to the battery and start charging.

Is the amperage higher than the standard charging amperage written on the battery?

YES

Charge the battery until the charging voltage reaches 15 V.

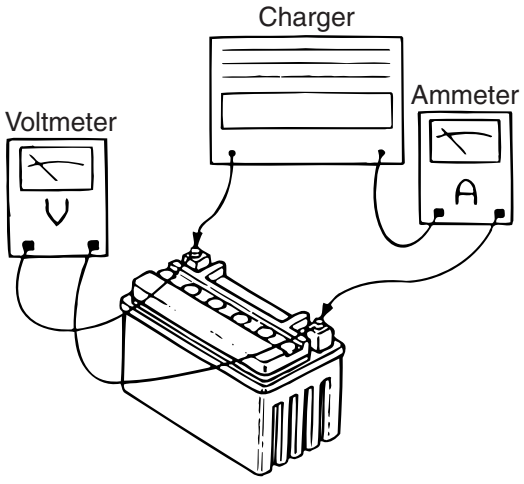
NOTE:
Set the charging time to a maximum of 20 hours.

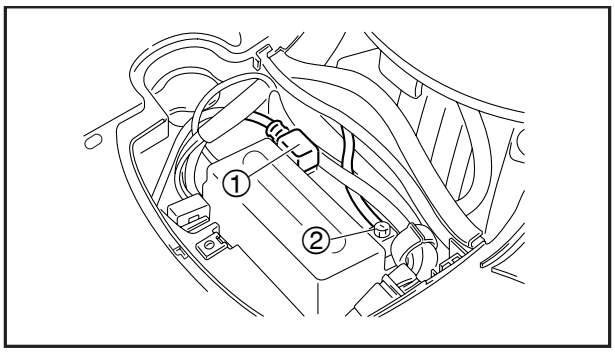
Leave the battery unused for more than 30 minutes before measuring its open-circuit voltage.
12.8 V ~ Charging is complete.
12.0 ~ 12.7 V ~ Recharging is required.
Under 12.0 V ~ Replace the battery.

NO

This type of battery charger cannot charge an MF battery. A variablevoltage charger is recommended.

CAUTION:
Constant amperage chargers are not suitable for charging MF batteries.





6. Install:
 - battery
7. Connect:
 - battery leads
 (to the battery terminals)

CAUTION:

First, connect the positive battery lead ①, and then the negative battery lead ②.

8. Check:
 - battery terminals
 Dirt → Clean with a wire brush.
 Loose connection → Connect properly.

9. Lubricate:
 - battery terminals

	Recommended lubricant **Dielectric grease**

10. Install:
 - battery holder
 - battery cover
 - mat
 Refer to “COVER AND PANEL”.

EAS00181

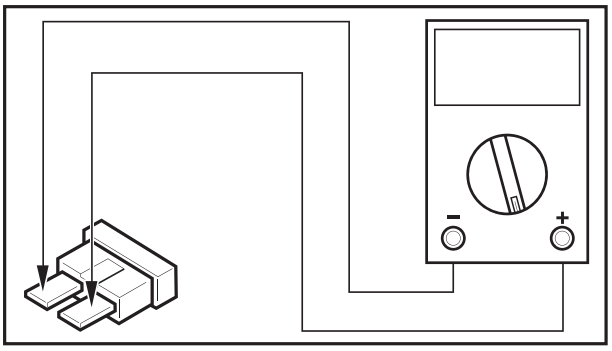
CHECKING THE FUSE

The following procedure applies to all of the fuse.

CAUTION:

To avoid a short circuit, always set the main switch to “OFF” when checking or replacing a fuse.

1. Remove:
 - mat
 - battery cover
 Refer to “COVER AND PANEL”.



2. Check:
 ● fuse

a. Connect the pocket tester to the fuse and check the continuity.

NOTE:
Set the pocket tester selector to "Ω × 1".

Pocket tester
90890-03132 (YU-03112-C)

b. If the pocket tester indicates "∞", replace the fuse.

3. Replace:
 ● blown fuse

a. Set the main switch to "OFF".
b. Install a new fuse of the correct amperage rating.
c. Set on the switches to verify if the electrical circuit is operational.
d. If the fuse immediately blows again, check the electrical circuit.

Fuse	Amperage rating	Q'ty
Main	7.5A	1

⚠WARNING

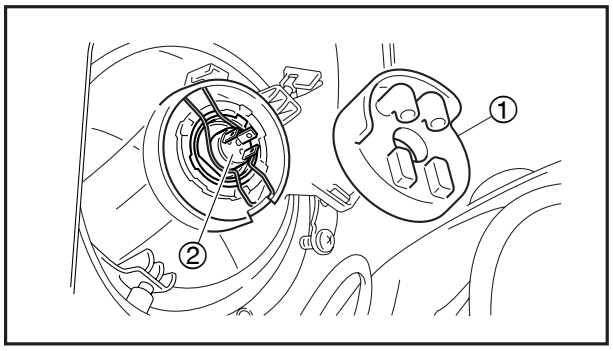
Never use a fuse with an amperage rating other than that specified. Improvising or using a fuse with the wrong amperage rating may cause extensive damage to the electrical system, cause the lighting and ignition systems to malfunction and could possibly cause a fire.

4. Install:
 ● battery cover
 ● mat
 Refer to "COVER AND PANEL".

EAS00182

REPLACING THE HEADLIGHT BULB

1. Remove:
 - headlight cover



2. Disconnect:
 - headlight coupler
3. Remove:
 - headlight bulb holder rubber①
 - headlight bulb holder
 - headlight bulb ②

⚠WARNING

Since the headlight bulb gets extremely hot, keep flammable products and your hands away from the bulb until it has cooled down.

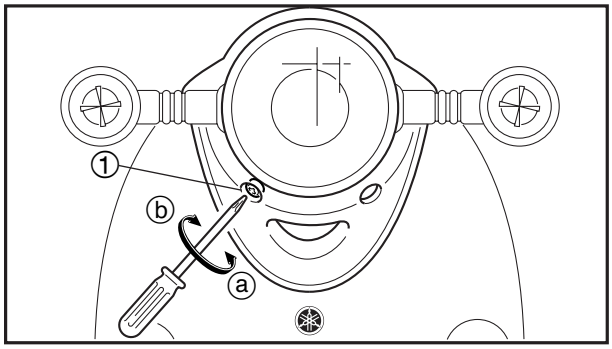
4. Install:
 - headlight bulb **New**

 Secure the new headlight bulb with the headlight bulb holder.

CAUTION:

Avoid touching the glass part of the headlight bulb to keep it free from oil, otherwise the transparency of the glass, the life of the bulb and the luminous flux will be adversely affected. If the headlight bulb gets soiled, thoroughly clean it with a cloth moistened with alcohol or lacquer thinner.

5. Install :
 - headlight bulb holder
6. Connect:
 - headlight bulb holder rubber
7. Install:
 - headlight lead coupler
8. Install:
 - headlight cover



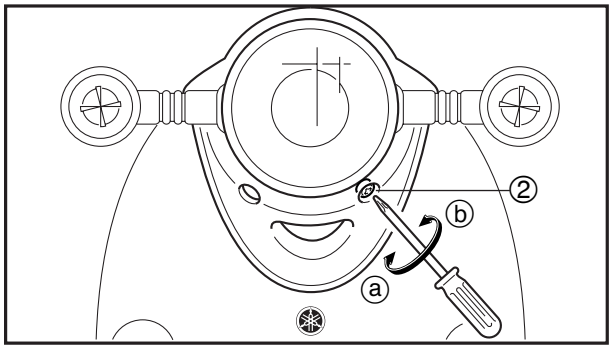
EAS00184

ADJUSTING THE HEADLIGHT BEAM

1. Adjust:
 - ●headlight beam (vertically)

a. Turn the adjusting screw ① in direction ⓐ or ⓑ .

Direction ⓐ	Headlight beam is raised.
Direction ⓑ	Headlight beam is lowered.



2. Adjust:
 - ● headlight beam (horizontally)

a. Turn the adjusting knob ② in direction ⓐ or ⓑ.

Direction ⓐ	Headlight beam moves to the right.
Direction ⓑ	Headlight beam moves to the left.

CHAPTER 4
CHASSIS

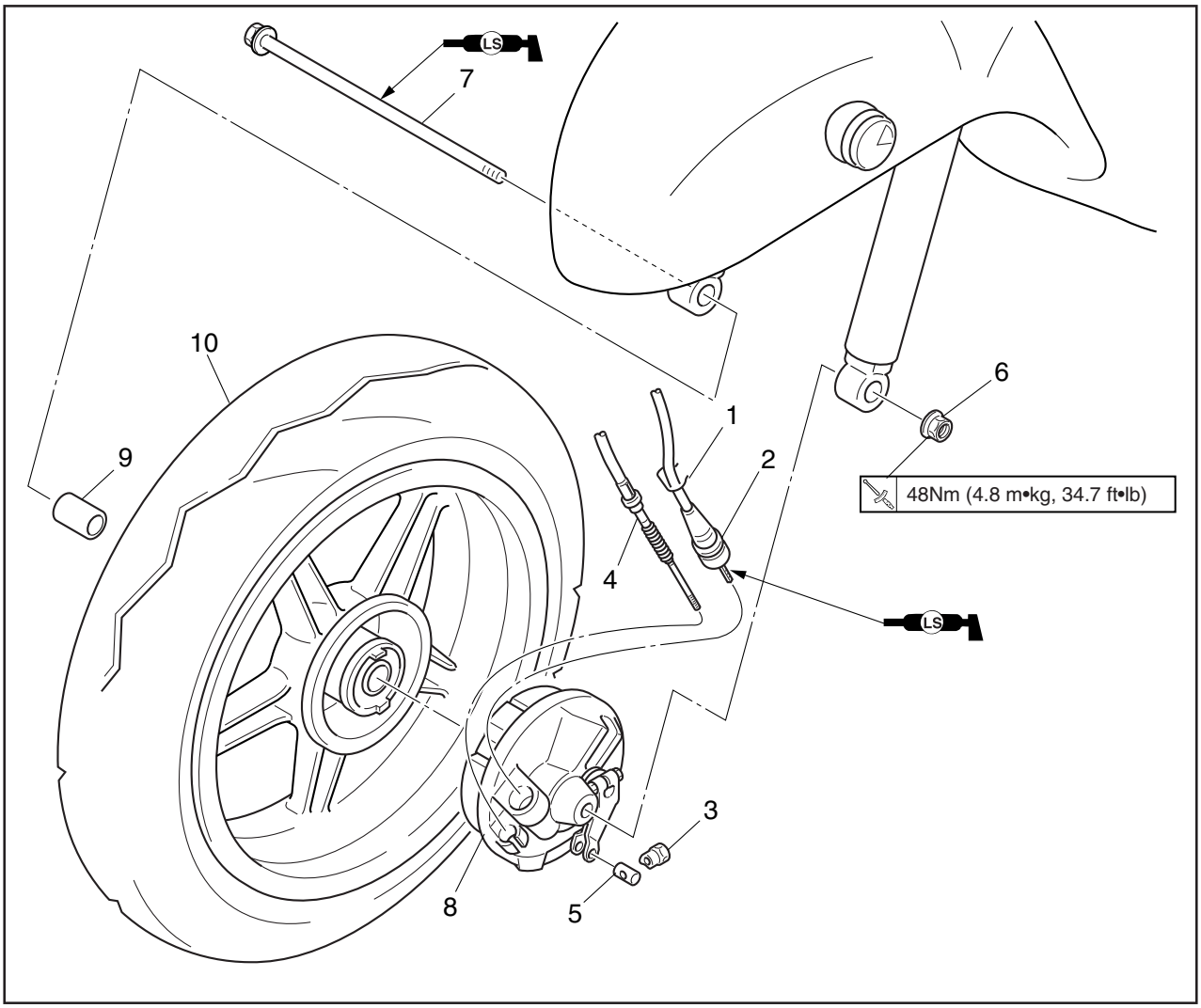
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EAS00517

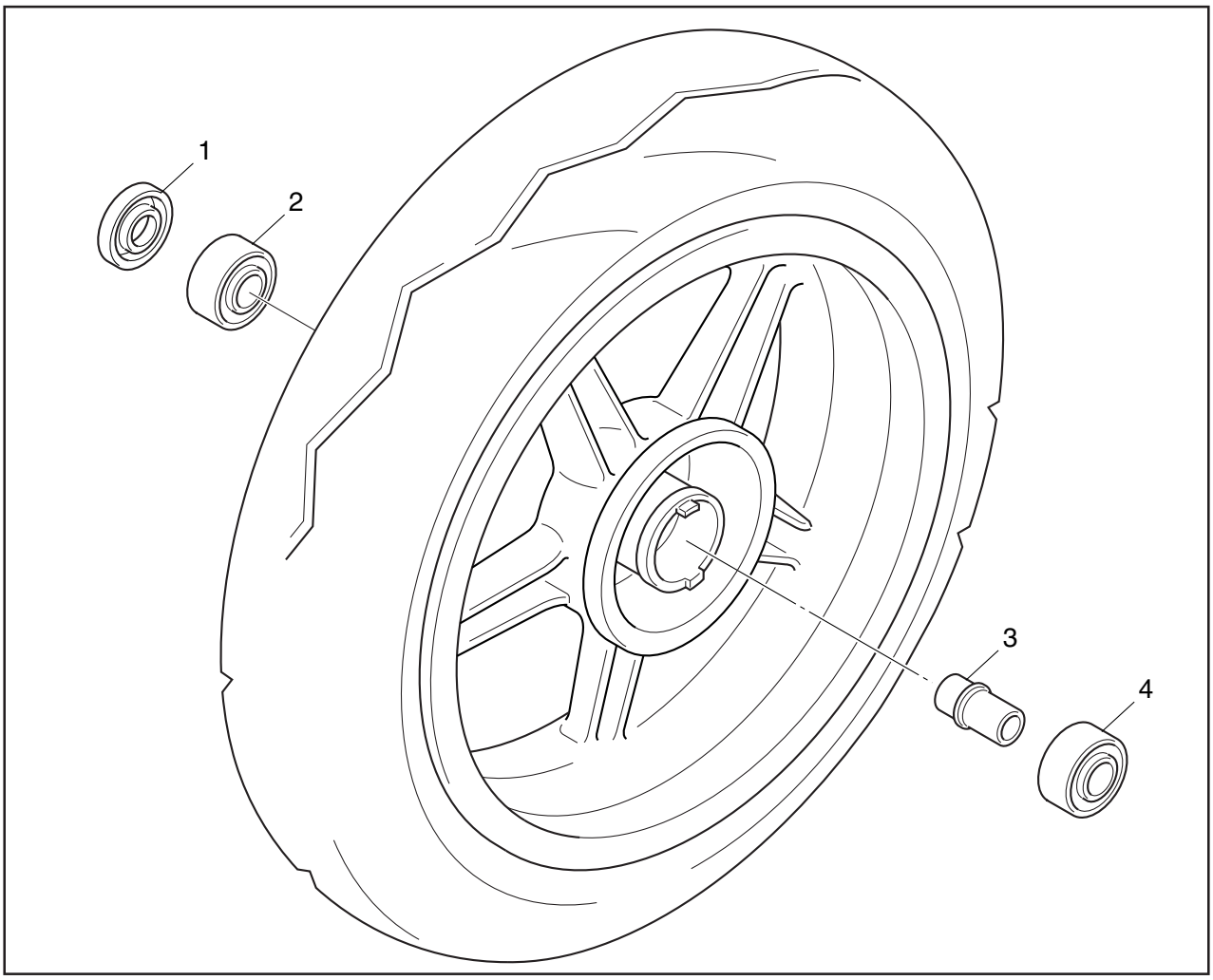
CHASSIS

FRONT WHEEL AND BRAKE



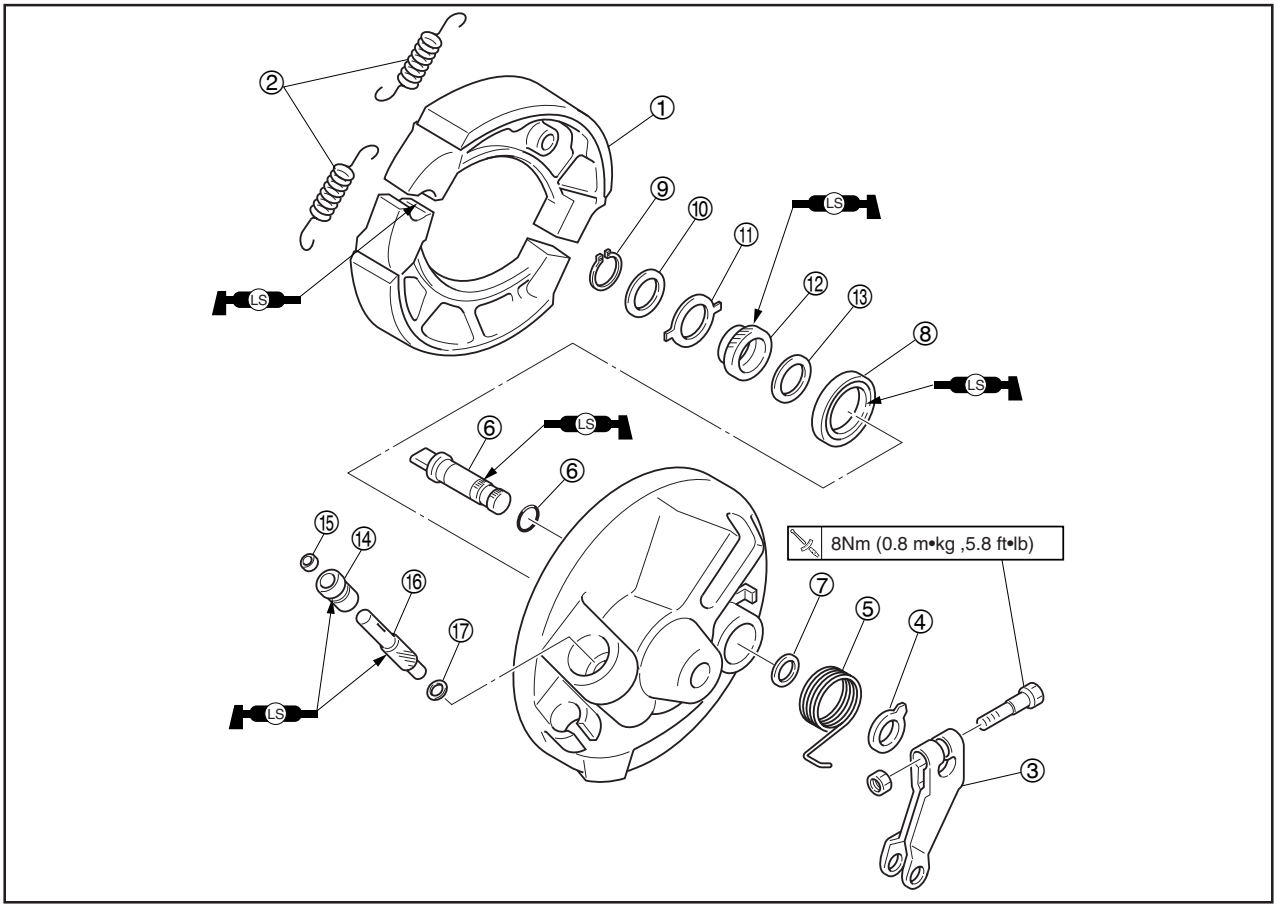
Order	Job/Part	Q'ty	Remarks
	Removing the front wheel and brake		Remove the parts in the order listed. **NOTE:** Place the scooter on a suitable stand so that the front wheel is elevated.
1	Stop ring	1	Refer to"REMOVING THE FRONT WHEEL and INSTALLING THE FRONT WHEEL".
2	Speedometer cable	1	
3	Adjuster	1	
4	Front brake cable	1	
5	Pin	1	
6	Wheel axle nut	1	
7	Wheel axle	1	
8	Front brake shoe plate	1	
9	Collar	1	
10	Front wheel	1	For installation, reverse the removal procedure.

EAS00518
FRONT WHEEL



Order	Job/Part	Q'ty	Remarks
	Disassembling the front wheel		Remove the parts in the order listed.
①	Oil seal	1	
②	Bearing	1	
③	Spacer	1	
④	Bearing	1	Refer to"REMOVING THE FRONT WHEEL" and "INSTALLING THE FRONT WHEEL" For assembly, reverse the disassembly procedure.

FRONT BRAKE SHOE PLATE



Order	Job/Part	Q'ty	Remarks
	Disassembling the front brake shoe plate		Remove the parts in the order listed.
①	Brake shoe kit	1	Refer to"DISASSEMBLING THE BRAKE SHOE PLATE" and "ASSEMBLING THE BRAKE SHOE PLATE".
②	Tension spring	2	
③	Comshaft lever	1	
④	Indicator plate	1	
⑤	Return spring	1	
⑥	Brake camshaft / O-ring	1/1	
⑦	Oil seal	1	
⑧	Oil seal	1	
⑨	Circlip	1	
⑩	Plate washer	1	
⑪	Speedometer clutch	1	
⑫	Drive gear	1	
⑬	Plate washer	1	
⑭	Bush	1	
⑮	Oil seal	1	
⑯	Speedometer gear	1	
⑰	Plate washer	1	
			For assembly, reverse the disassembly procedure.

EAS00520

REMOVING THE FRONT WHEEL

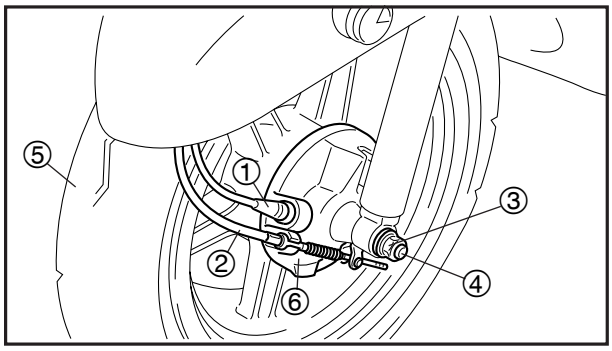
1. Stand the scooter on a level surface.

⚠WARNING

Securely support the scooter so that there is no danger of it falling over.

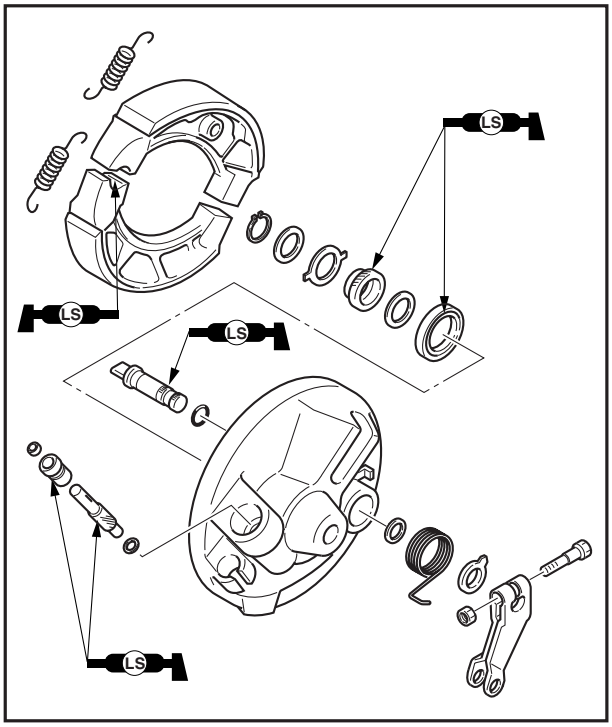
NOTE:

Place the scooter on a suitable stand so that the front wheel is elevated.



2. Remove:
 - speedometer cable ①
 - ront brake cable ②
 - front wheel axle nut ③
 - front wheel axle ④
 - front wheel ⑤
 - collar
 - front brake shoe plate ⑥

 Refer to" FRONT WHEEL AND BRAKE" .



EAS00524

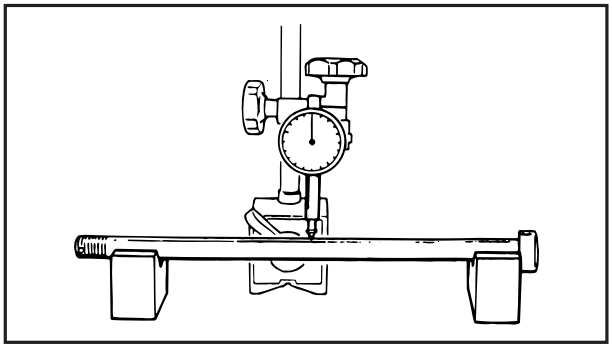
DISASSEMBLING THE BRAKE SHOE PLATE

1. Remove:
 - front brake shoe
 - comshaft lever
 - indicator plate
 - return spring
 - brake camshaft
 - speedometer gear

NOTE:

Remove the bush from the brake shoe plate with the meter gear bush tool.

2. Remove:
 - circlip
 - plate washer
 - speedometer clutch
 - drive gear
 - plate washer
3. Remove:
 - bush
 - speedometer gear
 - plate washer



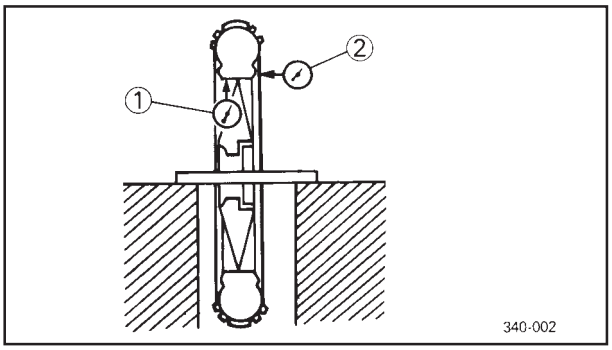
EAS00525
CHECKING THE FRONT WHEEL

1. Check:
 - wheel axle
 Roll the wheel axle on a flat surface.
 Bends → Replace.

⚠WARNING

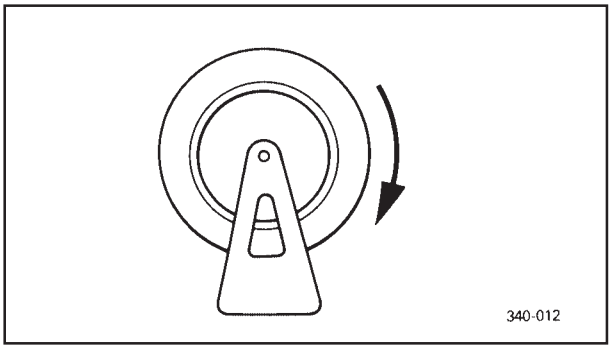
Do not attempt to straighten a bent wheel axle.

2. Check:
 - tire
 - front wheel
 Damage/wear → Replace.
 Refer to "CHECKING THE TIRES" and "CHECKING THE WHEELS" in chapter 3.

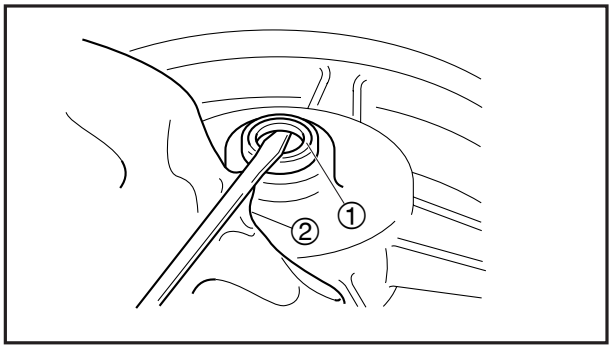


3. Measure:
 - radial wheel runout ①
 - lateral wheel runout ②
 Over the specified limits → Replace.

Radial wheel runout limit
1.0 mm (0.04 in)
Lateral wheel runout limit
1.0 mm(0.04 in)

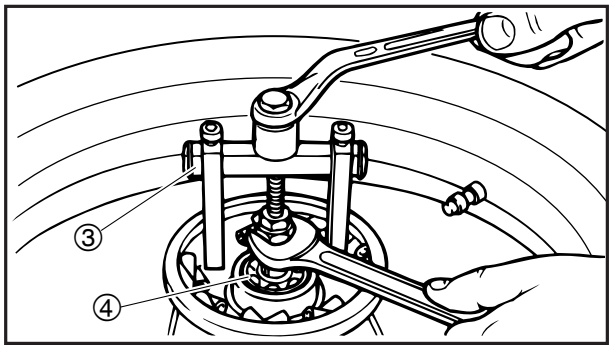


4. Check:
 - wheel bearings
 Front wheel turns roughly or is loose → Replace the wheel bearings.
 - oil seals
 Damage/wear → Replace.
5. Replace:
 - wheel bearings **New**
 - oil seal **New**



a. Clean the outside of the front wheel hub.
b. Remove the oil seal ① with a flat-head screwdriver.

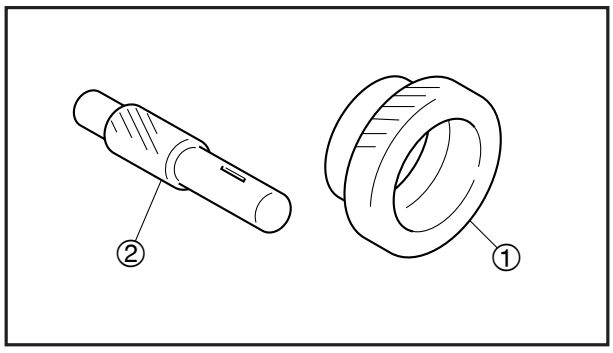
NOTE:
To prevent damaging the wheel, place a rag ② between the screwdriver and the wheel surface.



c. Remove the wheel bearings ④ with a general bearing puller③.
d. Install the new wheel bearings and oil seal in the reverse order of disassembly.

EAS00535
CHECKING THE SPEEDOMETER GEAR UNIT

1. Check:
 - speedometer clutch
 Bends/damage/wear → Replace.



2. Check:
 - speedometer drive gear ①
 - speedometer gear ②
 Damage/wear → Replace.

EAS00536

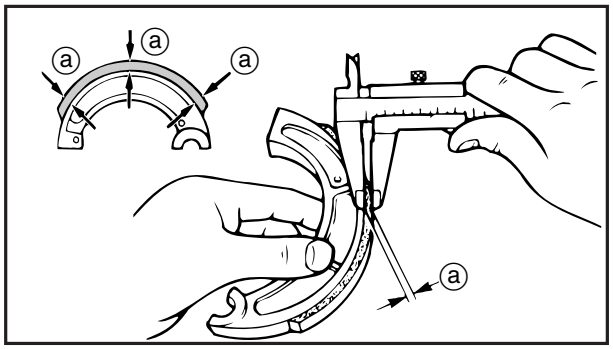
CHECKING THE BRAKE

The following procedure applies to all of the brake shoes.

1. Check:
 - brake shoe lining
 Glazed areas → Repair.
 Sand the glazed areas with course sandpaper.

NOTE:

After sanding the glazed areas, clean the brake shoe with a cloth.



2. Measure:
 - brake shoe lining thickness ⓐ
 Out of specification →Replace.

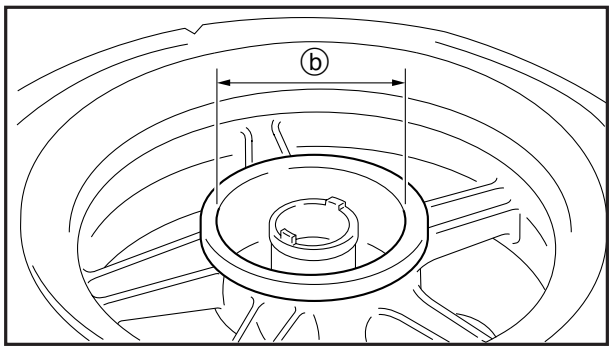
Brake shoe lining thickness limit (minimum)
2.0 mm (0.079 in)

⚠WARNING

Do not allow oil or grease to contact the brake shoes.

NOTE:

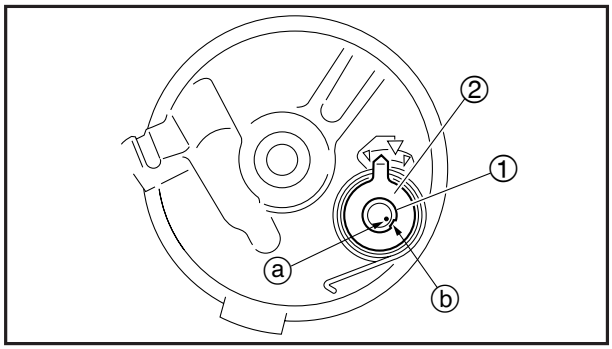
Replace the brake shoes as a set, if either is worn to the wear limit.



3. Measure:
 - brake drum inside diameter ⓑ
 Out of specification →Replace the wheel.

Brake drum inside diameter limit (maximum)
110.5 mm (4.35 in)

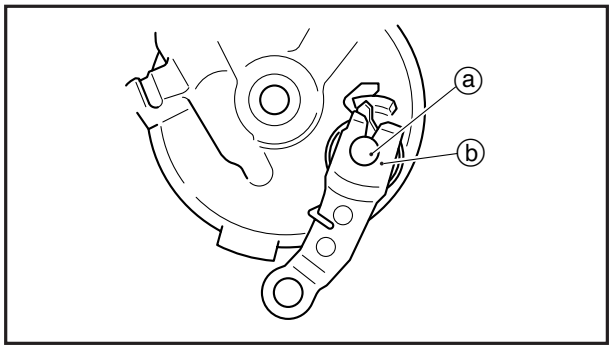
4. Check:
 - brake drum inner surface
 Oil deposits → Clean.
 Remove the oil with a rag soaked in lacquer thinner or solvent.
 Scratches → Repair.
 Lightly and evenly polish the scratches with an emery cloth.
5. Check:
 - brake camshaft
 Damage/wear → Replace.



EAS00537
ASSEMBLING THE BRAKE SHOE PLATE

1. Install:
 - brake camshaft ①
 - spring
 - brake shoe wear indicator ②

a. Install the brake camshaft so its punch mark ⓐ is positioned as shown.
b. Align the projection ⓑ on the brake shoe wear indicator with the notch in the brake camshaft.
c. Check that the brake shoes are properly positioned.

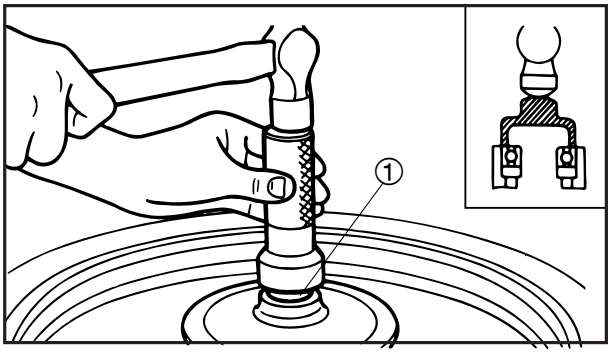


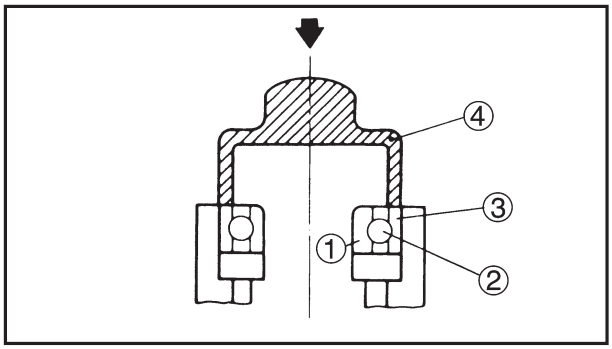
2. Install:
 - comshaft lever

7 Nm (0.7 m • kg, 5.1 ft • lb)

Align the camshaft punch mark ⓐ and comshaft lever punch mark ⓑ is positioned as shown.

3. Install:
 - speedometer gear
 - bush (with the meter gear bush tool)





EAS00538

ASSEMBLING THE FRONT WHEEL

1. Install:
 - wheel bearing(right)① **New**
 - oil seal **New**
 - spacer
 - wheel bearing(left) **New**

a. Install the new wheel bearings and oil seal in the reverse order of disassembly.

CAUTION:

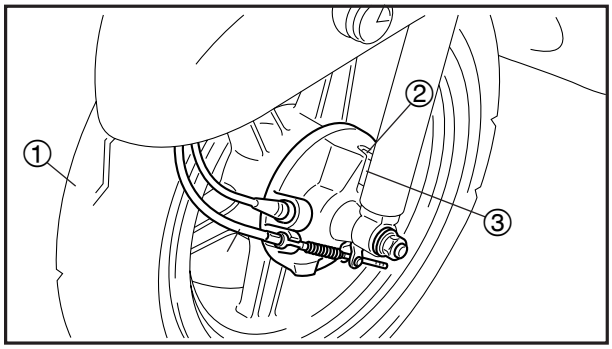
Do not contact the wheel bearing inner race ① or balls ②. Contact should be made only with the outer race ③.

NOTE:

Use a socket ④ that matches the diameter of the wheel bearing outer race and oil seal.

2. Install:
 - brake shoe plate

 Align the tab on the speedometer clutch with the slot in the wheel hub.



EAS00540

INSTALLING THE FRONT WHEEL

1. Lubricate:
 - wheel axle
 - wheel bearings
 - oil seal lips
 - speedometer drive gear
 - speedometer gear

Recommended lubricant
Lithium-soap-based grease

2. Install:
 - front wheel①

NOTE:
Make sure the slot② in the brake shoe plate fits over the stopper③ on the outer tube.

3. Tighten:
 - wheel axle nut

48 Nm (4.8 m • kg, 34.7 ft • lb)

⚠WARNING
Make sure the brake cable is routed properly.

CAUTION:
Before tightening the wheel axle nut, push down hard on the handlebar several times and check if the front fork rebounds smoothly.

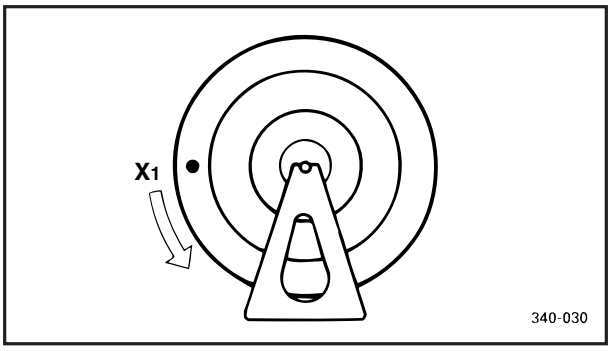
EAS00548

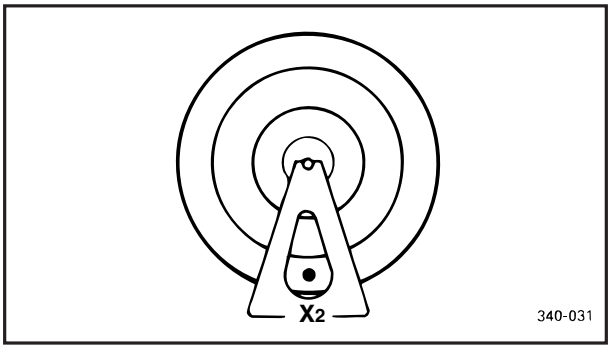
ADJUSTING THE FRONT WHEEL STATIC BALANCE

NOTE:

- After replacing the tire, wheel or both, the front wheel static balance should be adjusted.
- Adjust the front wheel static balance with the brake disc installed.

1. Remove:
 - balancing weight(s)



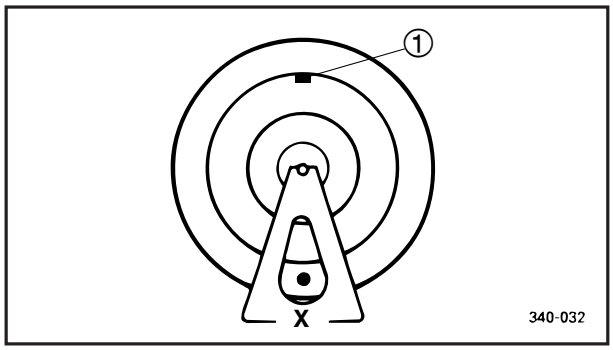


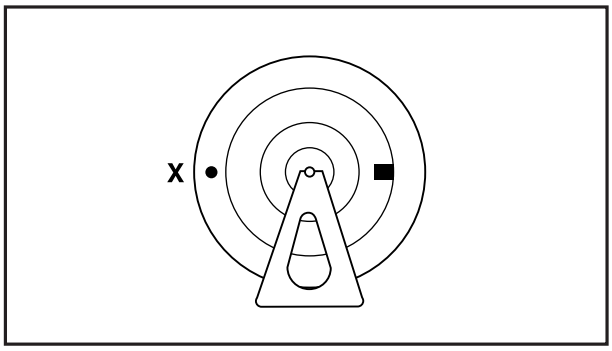
2. Find:
 - front wheel's heavy spot

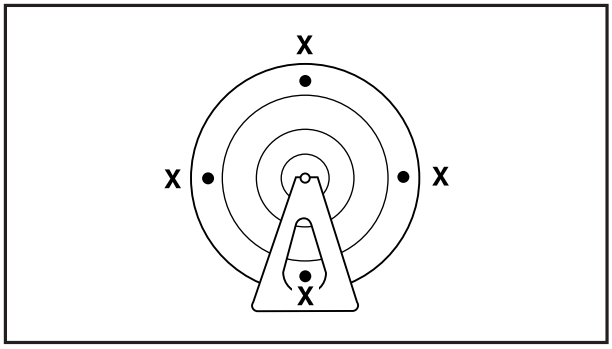
NOTE:

Place the front wheel on a suitable balancing stand.

a. Spin the front wheel.
b. When the front wheel stops, put an "X1" mark at the bottom of the wheel.
c. Turn the front wheel 90° so that the "X1" mark is positioned as shown.
d. Release the front wheel.
e. When the wheel stops, put an "X2" mark at the bottom of the wheel.
f. Repeat steps (d) through (f) several times until all the marks come to rest at the same spot.
g. The spot where all the marks come to rest is the front wheel's heavy spot "X".







3. Adjust:
 - front wheel static balance

a. Install a balancing weight ① onto the rim exactly opposite the heavy spot "X".

NOTE:
Start with the lightest weight.

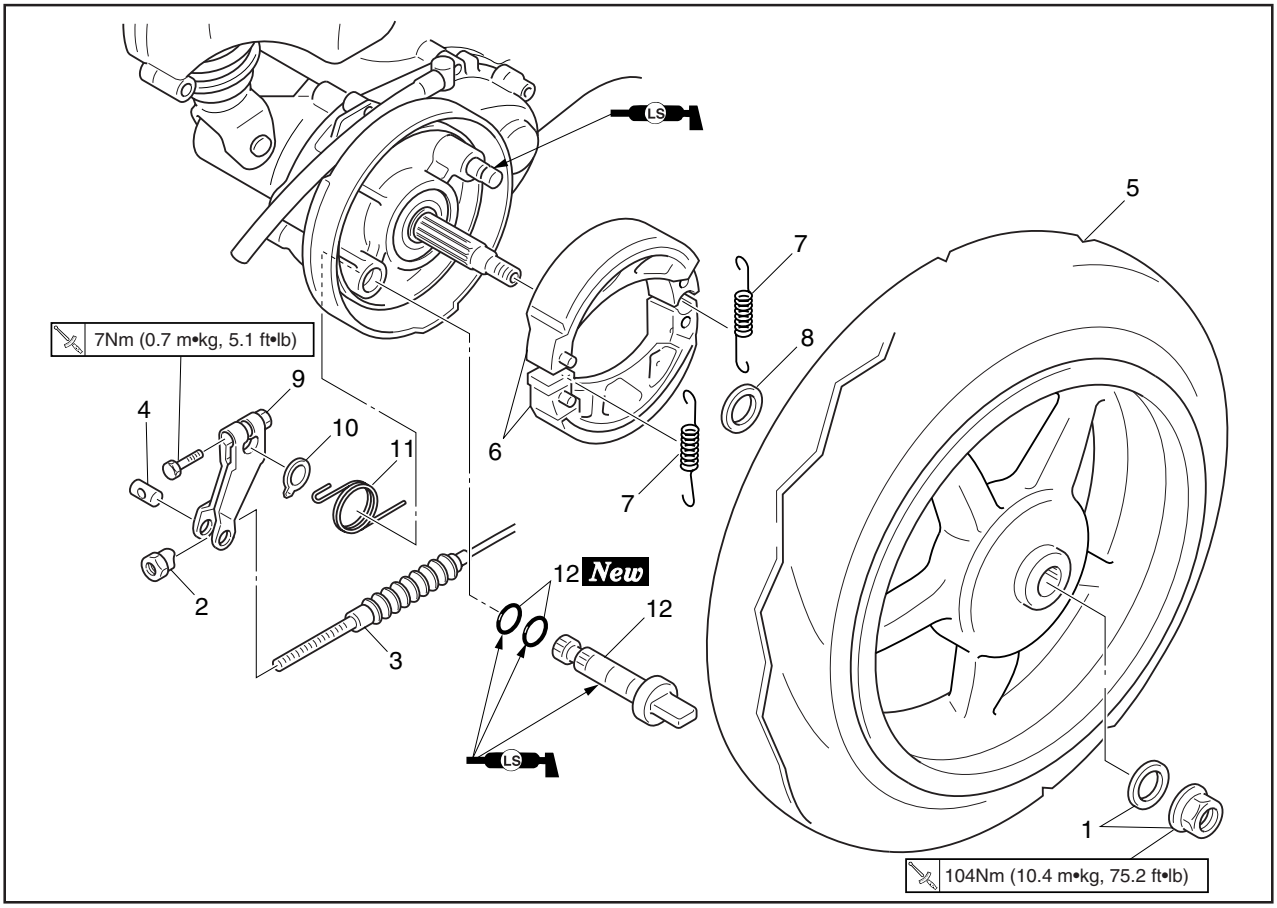
b. Turn the front wheel 90° so that the heavy spot is positioned as shown.
c. If the heavy spot does not stay in that position, install a heavier weight.
d. Repeat steps (b) and (c) until the front wheel is balanced.

4. Check:
 - front wheel static balance

a. Turn the front wheel and make sure it stays at each position shown.
b. If the front wheel does not remain stationary at all of the positions, rebalance it.

EAS00555

REAR WHEEL AND BRAKE



Order	Job/Part	Q'ty	Remarks
	Removing the rear wheel		Remove the parts in the order listed. **NOTE:** Place the scooter on a suitable stand so that the front wheel is elevated.
	Muffler assembly		Refer to "MANIFOLD, AIR FILTER AND MUFFLER ASSEMBLY "in chapter 5.
1	Self lock nut/Plate washer	1/1	
2	Brake adjuster	1	
3	Rear brake cable	1	
4	Pin	1	
5	Rear wheel	1	
6	Brake shoe kit	1	
7	Tension spring	2	
8	Plate washer	1	
9	Camshaft lever	1	
10	Indicator plate	1	
11	Return spring	1	
12	Brake camshaft/O-ring	1/2	
			For installation, reverse the removal procedure.

EAS00564

REMOVING THE REAR WHEEL

1. Stand the scooter on a level surface.

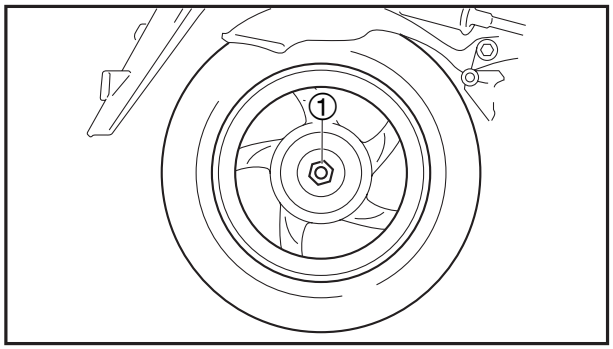
⚠WARNING

Securely support the scooter so that there is no danger of it falling over.

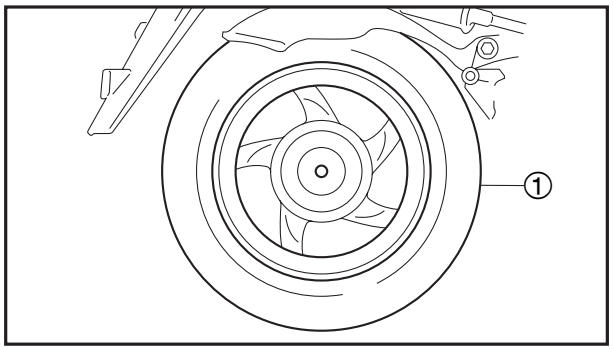
NOTE:

Place the scooter on a suitable stand so that the rear wheel is elevated.

2. Remove:
 - brake adjuster



3. Remove:
 - muffler assembly
 - wheel axle nut ①



4. Remove:
 - rear wheel①

EAS00565
CHECKING THE REAR WHEEL

1. Check:
 - tire
 - rear wheel
 Damage/wear → Replace.
 Refer to “CHECKING THE TIRES” and “CHECKING THE WHEELS” in chapter 3.
2. Measure:
 - radial wheel runout
 - lateral wheel runout
 Refer to “CHECKING THE FRONT WHEEL”.

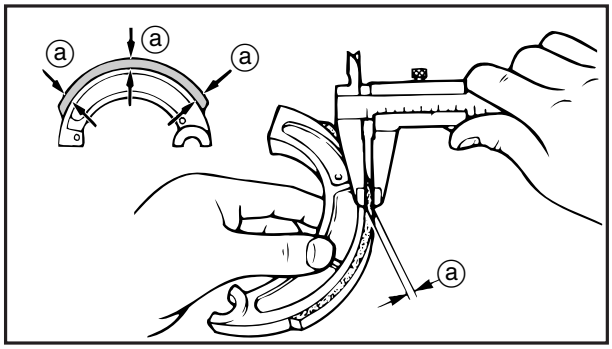
EAS00567
CHECKING THE REAR WHEEL DRIVE HUB

1. Check:
 - rear wheel drive hub
 Cracks/damage → Replace.

EAS00569
CHECKING THE BRAKE
The following procedure applies to all of the brake shoes.

1. Check:
 - brake shoe lining
 Glazed areas → Repair.
 Sand the glazed areas with course sandpaper.

NOTE:
After sanding the glazed areas, clean the brake shoe with a cloth.

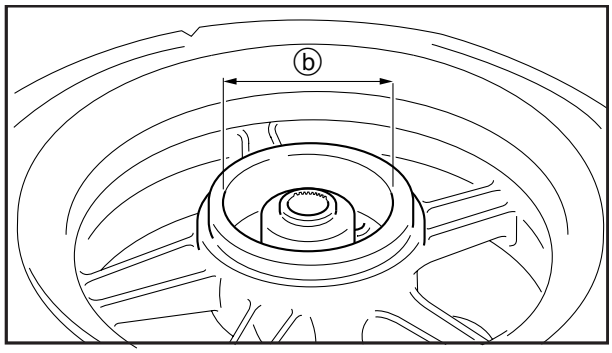


2. Measure:
 - brake shoe lining thickness ⓐ
 Out of specification → Replace.

Brake shoe lining thickness limit (minimum)
2.0 mm(0.079 in)

⚠WARNING
Do not allow oil or grease to contact the brake shoes.

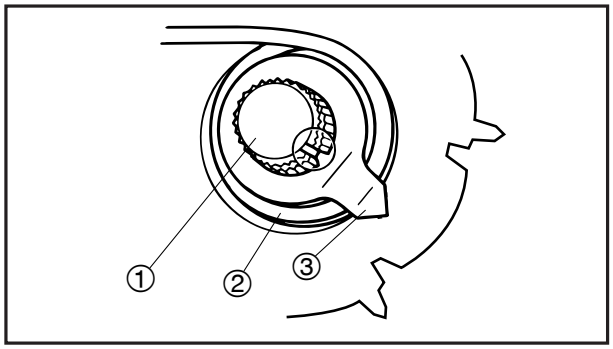
NOTE:
Replace the brake shoes as a set, if either is worn to the wear limit.



3. Measure:
 - brake drum inside diameter ⓑ
 Out of specification → Replace the wheel.

Brake drum inside diameter limit (maximum)
110.5 mm(4.35 in)

4. Check:
 - brake drum inner surface
 Oil deposits → Clean.
 Remove the oil with a rag soaked in lacquer thinner or solvent.
 Scratches → Repair.
 Lightly and evenly polish the scratches with an emery cloth.
5. Check:
 - brake camshaft
 Damage/wear → Replace.



EAS00570

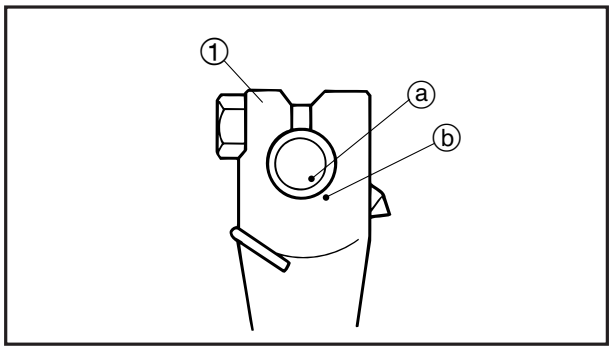
ASSEMBLING THE BRAKE SHOE PLATE

1. Install:
 - brake camshaft ①

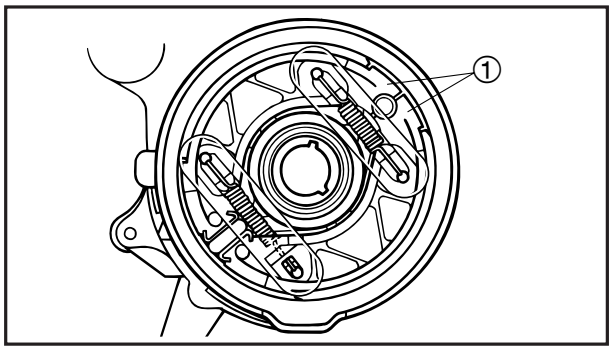
7 Nm (0.7 m • kg, 5.1 ft • lb)

 - return spring ②
 - brake shoe wear indicator ③

a. Install the brake camshaft ① so its punch mark ⓐ is positioned as shown.
b. Align the projection ⓑ on the brake shoe wear indicator with the notch in the brake shoe camshaft.
c. Check that the brake shoes are properly positioned.

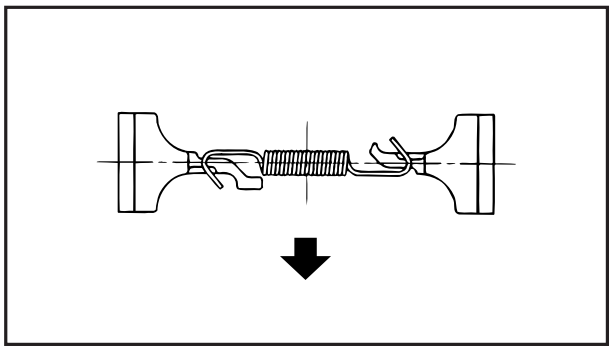


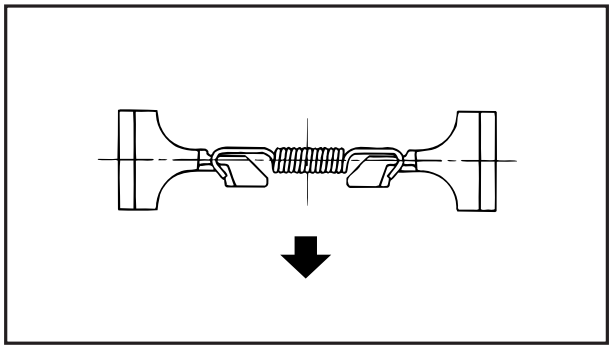
2. Install:
 - brake shoes①
 - tension springs



CAUTION:

- **Do not put lubricating oil on the brake lining.**
- **Change the tension spring at the same time of changing the brake shoe.**
- **Refer to the direction in the illustration when assembling the brake shoe and spring.**
- **Refer to the illustration with regards to the assembly direction of tension spring, and do not let the spring hook and coil to be damaged by the pliers.**



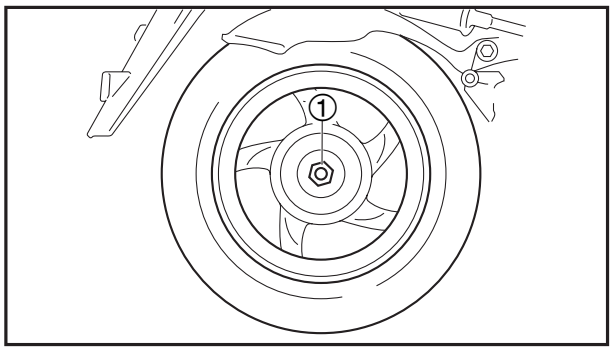


EAS00574
INSTALLING THE REAR WHEEL

1. Lubricate:
 - wheel axle

	Recommended lubricant **Lithium-soap-based grease**

2. Install:
 - rear wheel



3. Tighten:
 - wheel axle nut①

	104 Nm (10.4 m • kg, 75.2 ft • lb)

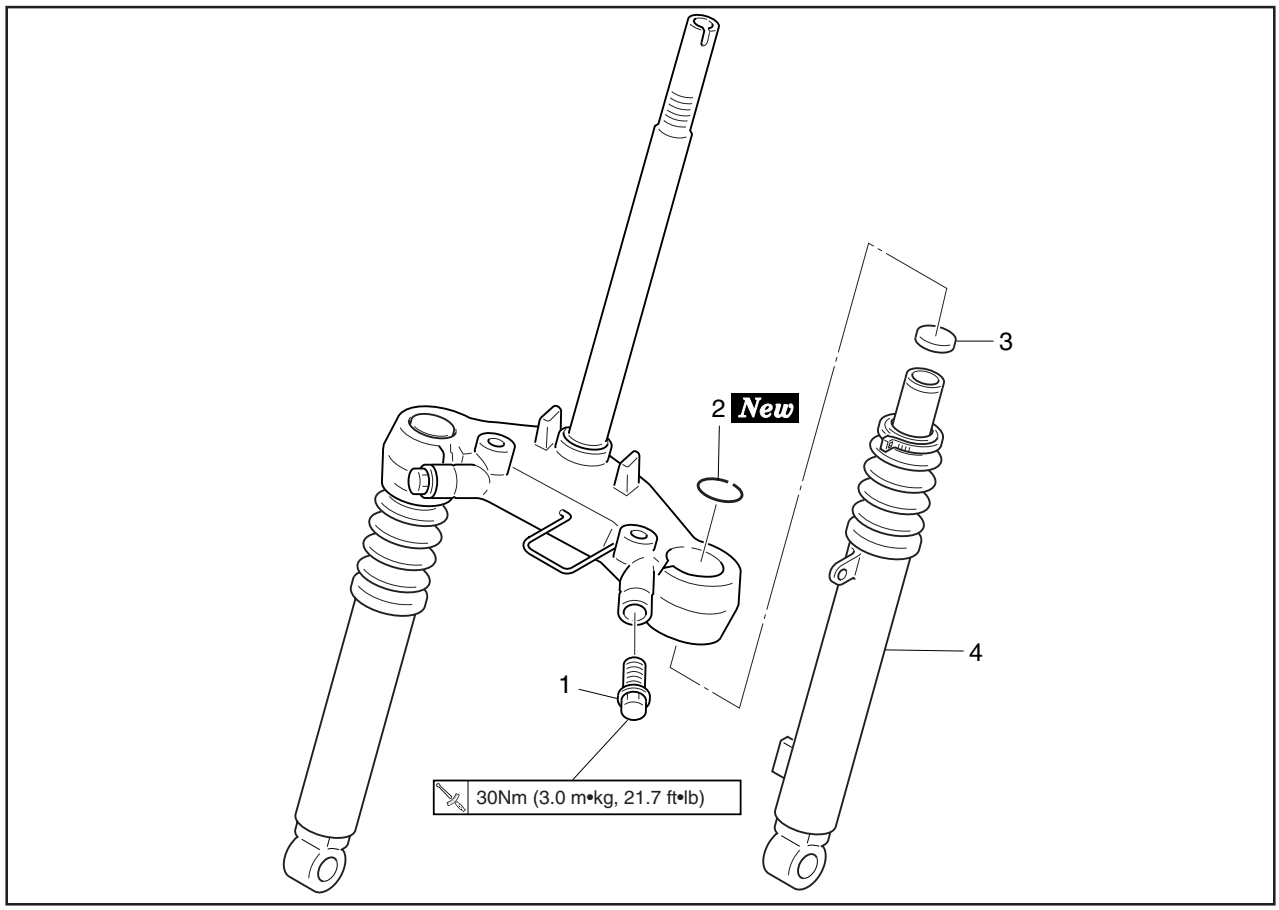
4. Install:
 - muffler assembly
5. Adjust:
 - brake lever free play
 Refer to “ADJUSTING THE REAR BRAKE” in chapter 3.

EAS00575
ADJUSTING THE REAR WHEEL STATIC BALANCE

NOTE:
- After replacing the tire, wheel or both, the rear wheel static balance should be adjusted.
- Adjust the rear wheel static balance with the rear wheel drive hub installed.

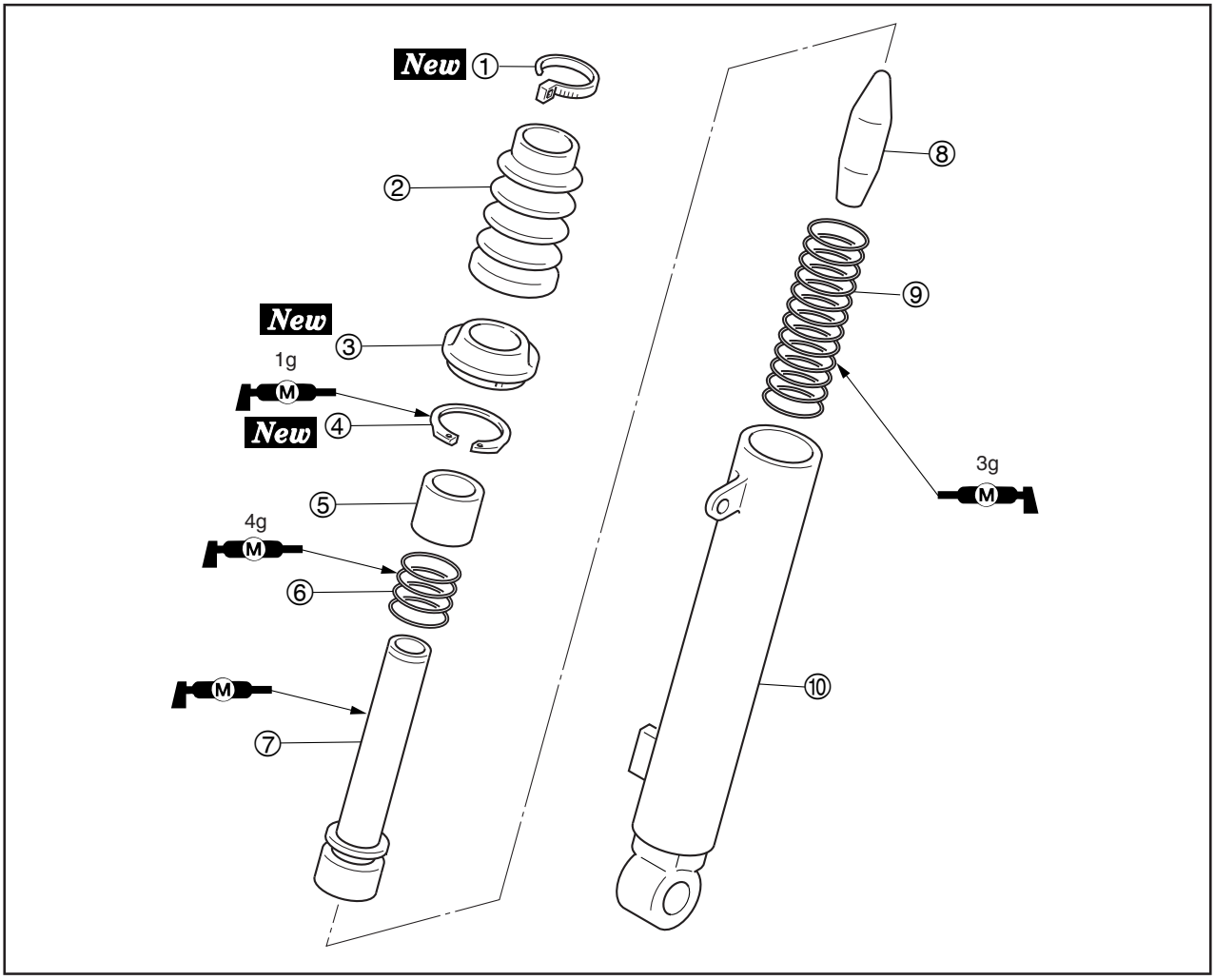
1. Adjust:
 - rear wheel static balance
 Refer to “ADJUSTING THE FRONT WHEEL STATIC BALANCE”.

EAS00646
FRONT FORK



Order	Job/Part	Q'ty	Remarks
	Removing the front fork legs		Remove the parts in the order listed.
	Front wheel		Refer to "FRONT WHEEL AND BRAKE".
	Handlebar		Refer to "HANDLE BAR".
	Front fork assembly		Refer to "STEERING HEAD".
	Headlight cover		Refer to "COVER AND PANEL" in chapter 3.
	Leg shield 1		
1	Lower bracket pinch bolt	1	
2	Snap ring	1	
3	Inner tube plug	1	
4	Front fork leg	1	
			For installation, reverse the removal procedure.

EAS00648



Order	Job/Part	Q'ty	Remarks
	Disassembling the front fork legs		Remove the parts in the order listed.
①	Band	1	
②	Boot	1	
③	Dust seal	1	
④	Circlip	1	Refer to "DISASSEMBLING AND INSTALLING THE FRONT FORK LEGS "
⑤	Spring guide	1	
⑥	Rebound spring	1	
⑦	Inner tube	1	
⑧	Damper rubber	1	
⑨	Fork spring	1	
⑩	Outer tube	1	
			For assembly, reverse the disassembly procedure.

EAS00651

REMOVING THE FRONT FORK LEGS

The following procedure applies to both of the front fork legs.

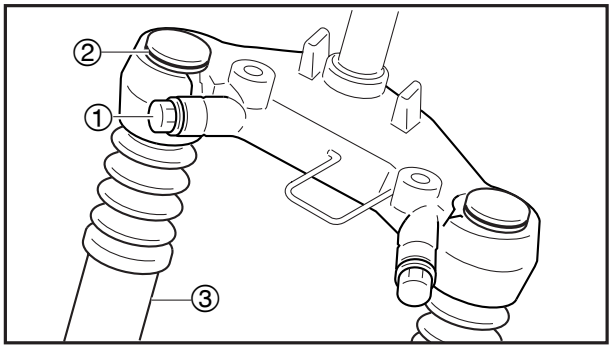
1. Stand the scooter on a level surface.

⚠WARNING

Securely support the scooter so that there is no danger of it falling over.

NOTE:

Place the scooter on a suitable stand so that the front wheel is elevated.



2. Loosen:
 - lower bracket pinch bolt ①
3. Remove:
 - snap ring ②
 - front fork leg③

⚠WARNING

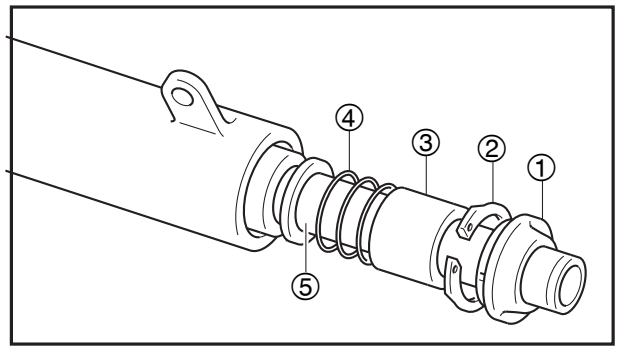
Before loosening the lower bracket pinch bolts, support the front fork leg.

EAS00653

DISASSEMBLING THE FRONT FORK LEGS

The following procedure applies to both of the front fork legs.

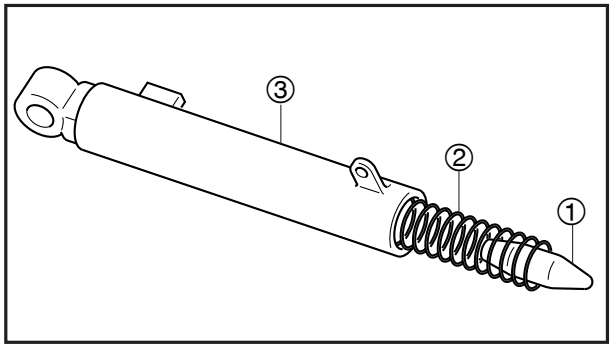
1. Remove:
 - band
 - foot
 - inner tube plug



2. Remove:
 - dust seal ①
 - circlip②
 - spring guide③
 - rebound spring ④
 - inner tube ⑤

CAUTION:

Do not scratch the inner tube.

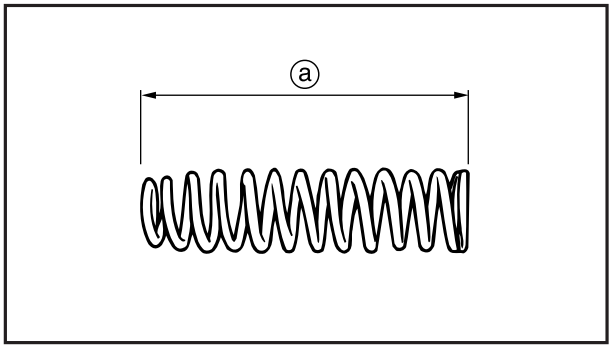


3. Remove:
 - damper rubber ①
 - fork spring ②
 - outer tube ③

EAS00656
CHECKING THE FRONT FORK LEGS
The following procedure applies to both of the front fork legs.

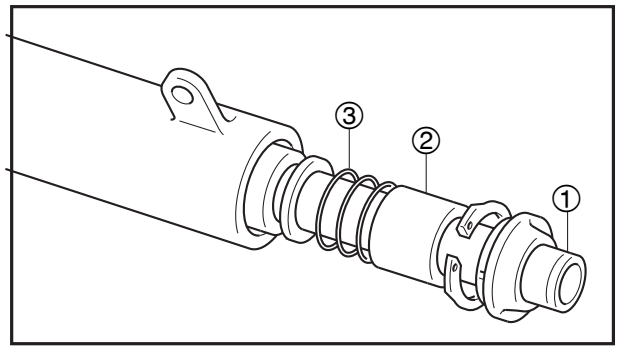
1. Check:
 - inner tube
 - outer tube
 Bends/damage/scratches → Replace.

⚠WARNING
Do not attempt to straighten a bent inner tube as this may dangerously weaken it.

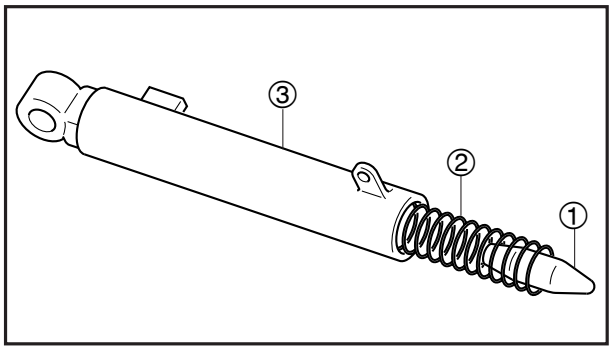


2. Measure:
 - spring free length ⓐ
 Out of specification → Replace.

Spring free length
125 mm (4.921 in)
<Limit> : 122.5 mm (4.823 in)



3. Check:
 - inner tube ①
 - spring guide②
 - rebound spring ③
 Damage/wear → Replace.



4. Check:
 - damper rubber ①
 - fork spring②
 - outer tube ③
 Damage/wear → Replace.

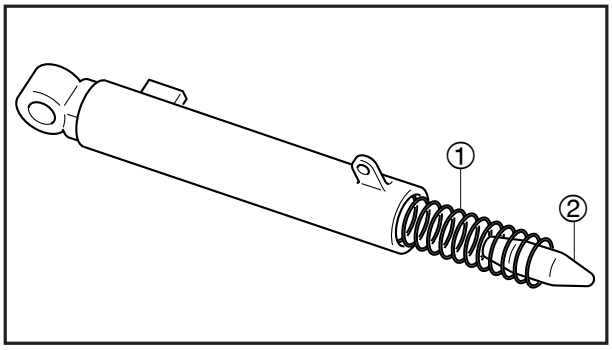
EAS00658

ASSEMBLING THE FRONT FORK LEGS

The following procedure applies to both of the front fork legs.

NOTE:

- When assembling the front fork leg, be sure to replace the following parts:
 - dust seal
 - circlip
- Before assembling the front fork leg, make sure all of the components are clean.



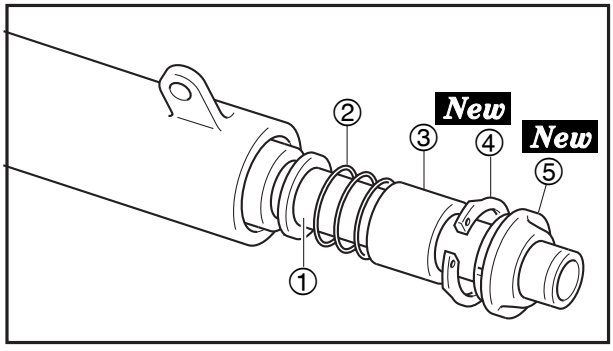
1. Install:
 - fork spring ①
 - damper rubber②

NOTE:

- Install the spring with the smaller pitch facing down .

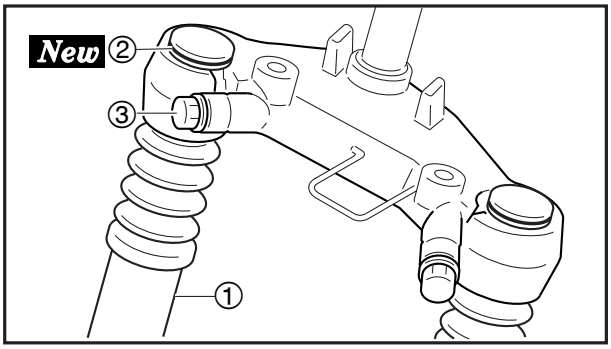
2. Lubricate:
 - inner tube's outer surface
 - rebound spring
 - fork spring
 - circlip

	Recommended lubricant **Molybdenum-disulfide grease**



3. Install:
 - inner tube①
 - rebound spring ②
 - spring guide③
 - circlip④ New
 - dust seal ⑤ New

4. Install:
 - boot
 - band New



EAS00663

INSTALLING THE FRONT FORK LEGS

The following procedure applies to both of the front fork legs.

1. Install:
 - ●front fork leg ①
 - ●snap ring ② New
 - ●inner tube plug
 - ●lower bracket pinch bolt ③

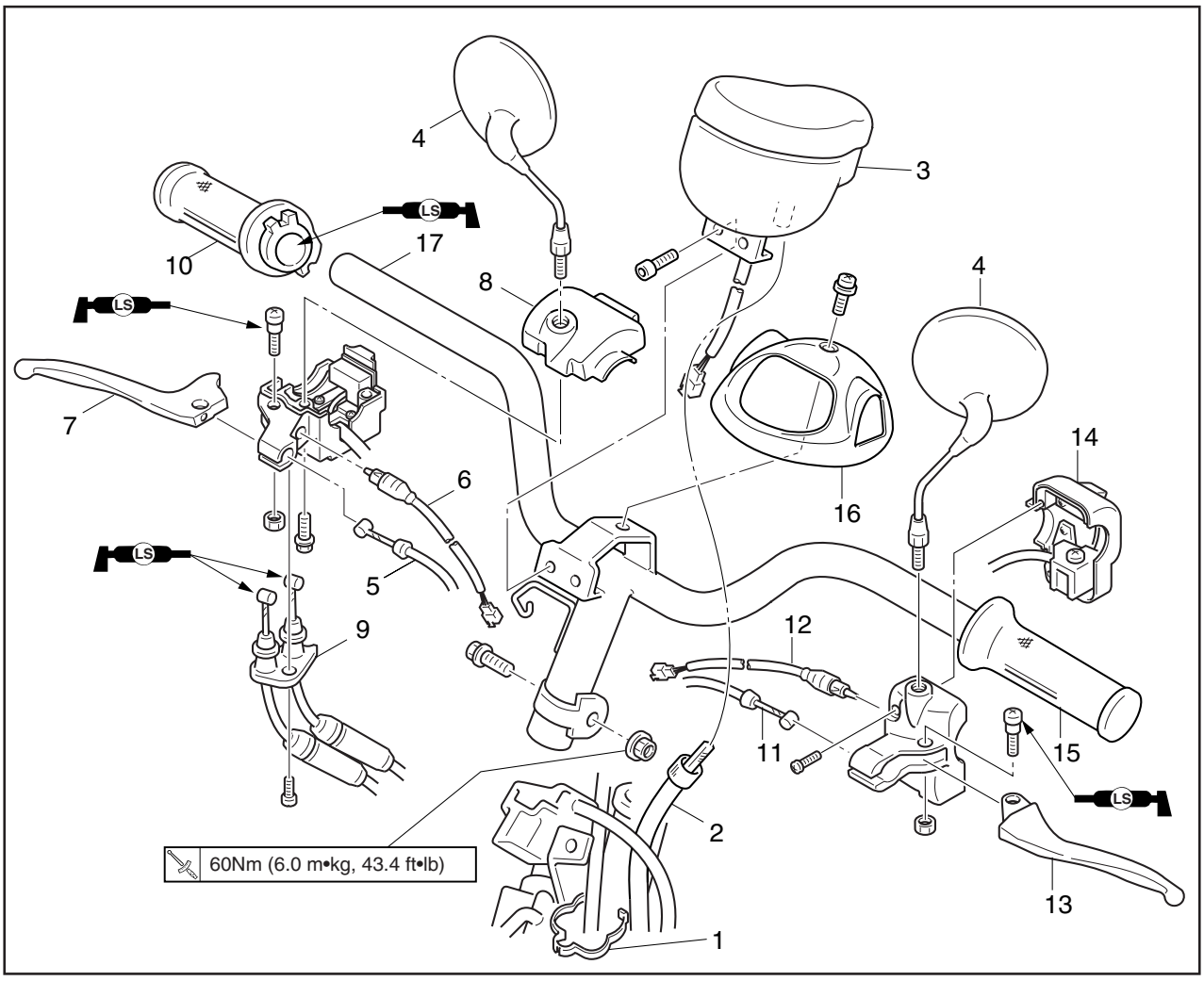
NOTE:

Pull up the inner tube until it stops, then install the snap ring to groove.

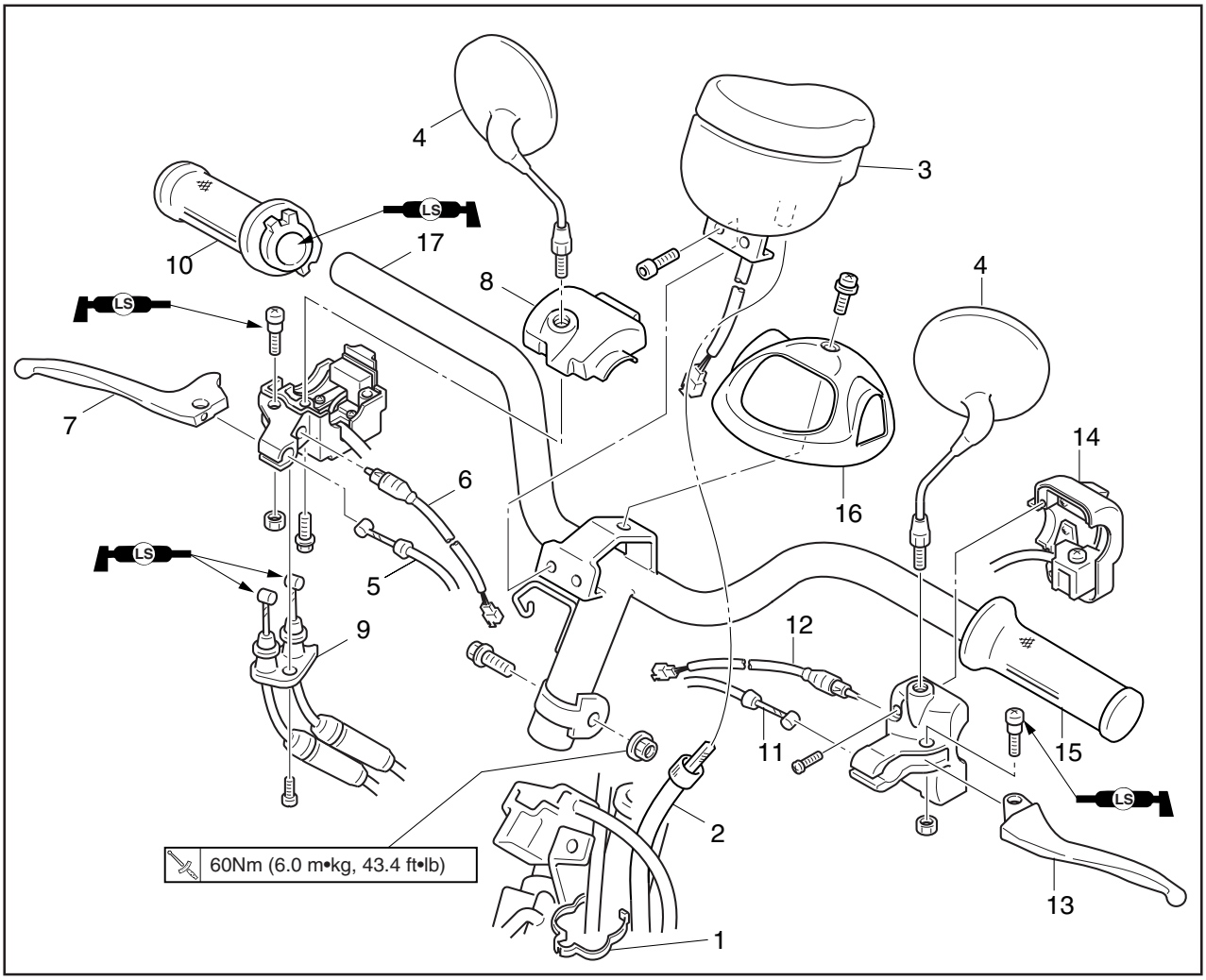
2. Tighten:
 - ●lower bracket pinch bolt

	30 Nm (3.0 m • kg, 21.7 ft • lb)

EAS00664
HANDLEBAR



Order	Job/Part	Q'ty	Remarks
	Removing the handlebar		Remove the parts in the order listed.
	Headlight cover		Refer to "COVER AND PANEL" in chapter 3.
	Leg shield 1		
1	Clamp	1	
2	Speedometer cable	1	
3	Speedometer assembly	1	
4	Rear view mirror(left and right)	1/1	
5	Front brake cable	1	
6	Front brake switch	1	
7	Brake lever (right)	1	
8	Handlebar holder assembly(right)	1	
9	Throttle cable kit	1	
10	Throttle grip assembly	1	
11	Rear brake cable	1	
12	Rear brake switch	1	
13	Brake lever(left)	1	
14	Handlebar holder assembly(left)	1	



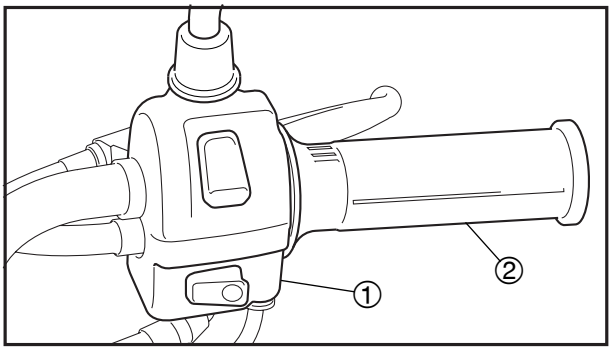
Order	Job/Part	Q'ty	Remarks
15	Handlebar grip	1	
16	Handlebar upper cover	1	
17	Handlebar assembly	1	
			For installation, reverse the removal procedure.

EAS00666
REMOVING THE HANDLEBAR

1. Stand the scooter on a level surface.

⚠WARNING

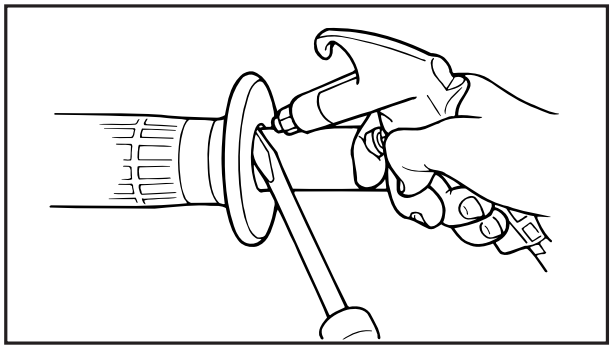
Securely support the scooter so that there is no danger of it falling over.



2. Remove:
 - ●handlebar holder assembly (right)①
 - ●throttle grip assembly ②

NOTE:

While removing the handlebar holder assembly (right), pull back the rubber cover.



3. Remove:
 - ●handlebar grip

NOTE:

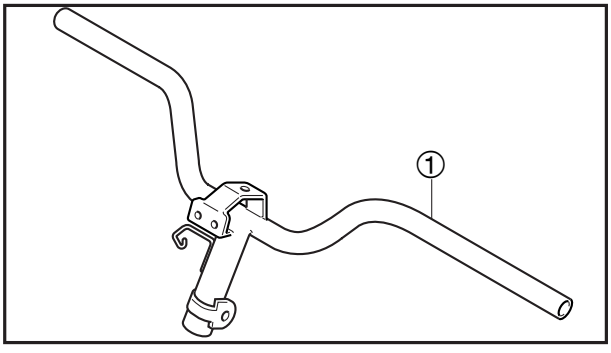
Blow compressed air between the handlebar and the handlebar grip, and gradually push the grip off the handlebar.

EAS00668
CHECKING THE HANDLEBAR

1. Stand the scooter on a level surface.

⚠WARNING

Securely support the scooter so that there is no danger of it falling over.



2. Check:
 - ●handlebar ①

 Bends/cracks/damage → Replace.

⚠WARNING

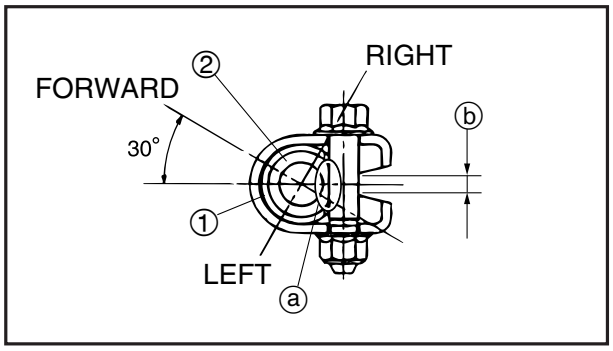
Do not attempt to straighten a bent handlebar as this may dangerously weaken it.

EAS00673
INSTALLING THE HANDLEBAR

1. Stand the scooter on a level surface.

⚠WARNING

Securely support the scooter so that there is no danger of it falling over.



2. Install:
 - ●handlebar ①

NOTE:

Align the slot ⓐ on the handlebar with the steering shaft ② surface.

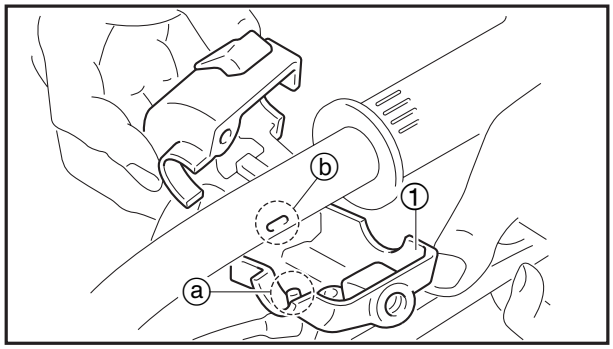
3. Tighten:
 - ●handlebar

	60 Nm (6.0 m • kg, 43.4 ft • lb)

CAUTION:

There must be a space ⓑ after tighting bolt.

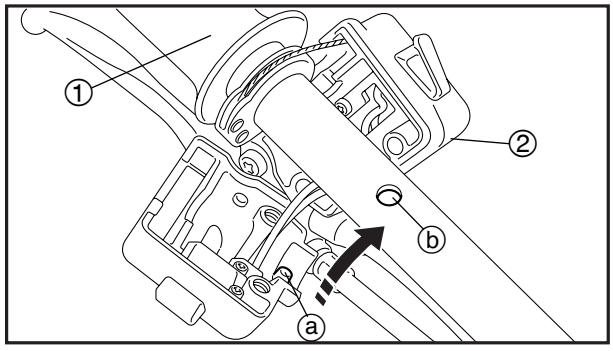
4. Install:
 - ●handlebar upper cover



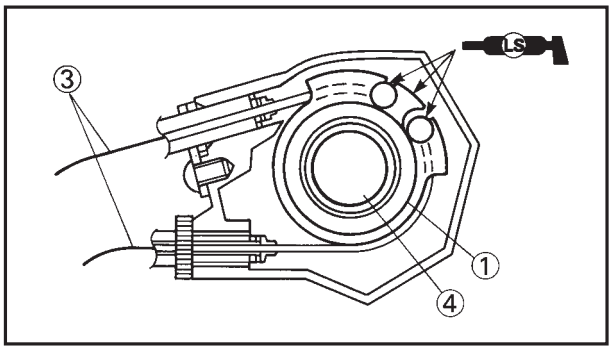
5. Install:
 - ●handlebar holder assembly (left)①

NOTE:

Align the projection ⓐ on the handlebar holder assembly (left) with the hole ⓑ on the handlebar.



6. Install:
 - ●throttle grip assembly ①
 - ●handlebar holder assembly (right)②
 - ●throttle cable kit ③



NOTE:

- Lubricate the inside of the throttle grip with a thin coat of lithium-soap-based grease and install it onto the handlebar④.
- Align the projection ⓐ on the right handlebar holder assembly with the hole ⓑ on the handlebar.

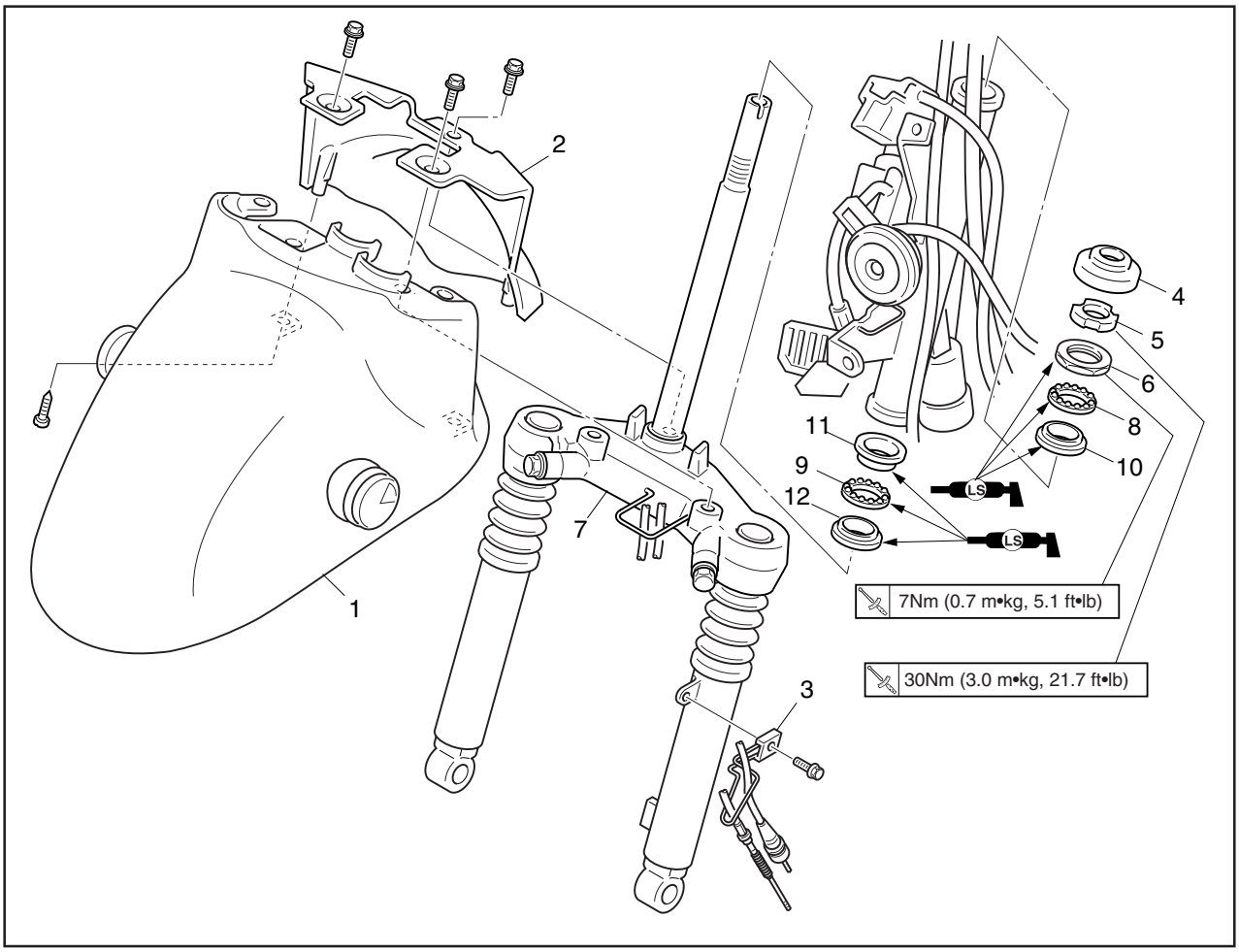
⚠WARNING

Make sure the throttle grip operates smoothly.

7. Adjust:
 - throttle cable free play
 Refer to "ADJUSTING THE THROTTLE CABLE FREE PLAY" in chapter 3.

Throttle cable free play (at the flange of the throttle grip)
1.5 ~ 3.5 mm (0.059 ~ 0.138 in)

EAS00675
STEERING HEAD



Order	Job/Part	Q'ty	Remarks
	Removing the front fork assembly		Remove the parts in the order listed.
	Front wheel		Refer to "FRONT WHEEL AND BRAKE".
	Leg shield 1		Refer to "COVER AND PANEL" in chapter 3.
	Handlebar assembly		Refer to "HANDLEBAR".
1	Front fender	1	
2	Inner fender	1	
3	Cable holder	1	
4	Ball race cover	1	
5	Ring nut	1	
6	Upper bearing inner race	1	
7	Front fork assembly	1	
8	Upper bearing	1	
9	Lower bearing	1	
10	Upper bearing outer race	1	
11	Lower bearing outer race	1	
12	Lower bearing inner race	1	
			For installation, reverse the removal procedure.

EAS00678

REMOVING THE FRONT FORK ASSEMBLY

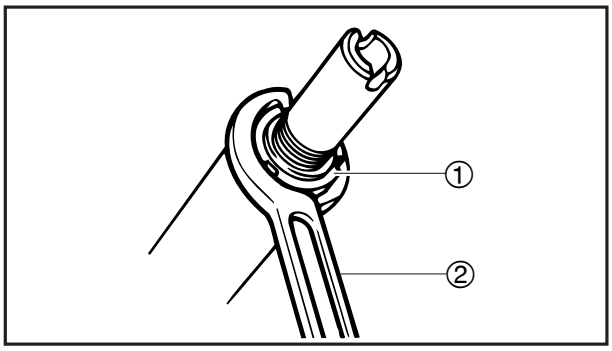
1. Stand the scooter on a level surface.

⚠WARNING

Securely support the scooter so that there is no danger of it falling over.

NOTE:

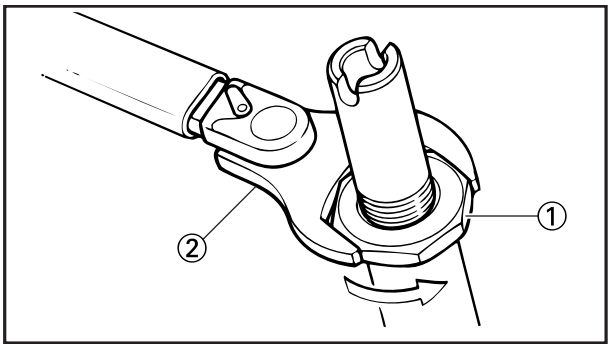
Place the scooter on a suitable stand so that the front wheel is elevated.



2 . Remove:
- ●ball race cover
- ●ring nut ①
 (with the ring nut wrench ②)



Ring nut wrench
90890-01268
YU-01268



3 . Remove:
- ●upper bearing inner race①
 (with the ring nut wrench ②)

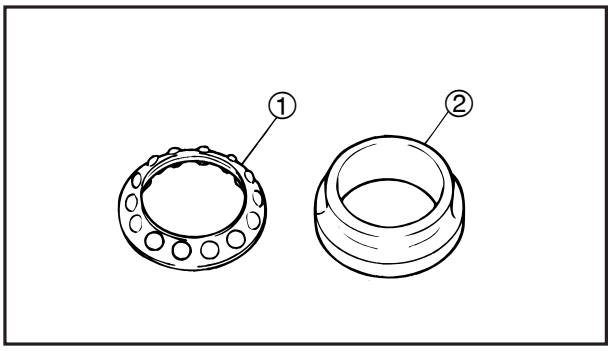
⚠WARNING

Securely support the front fork assembly so that there is no danger of it falling.

EAS00682
CHECKING THE STEERING HEAD

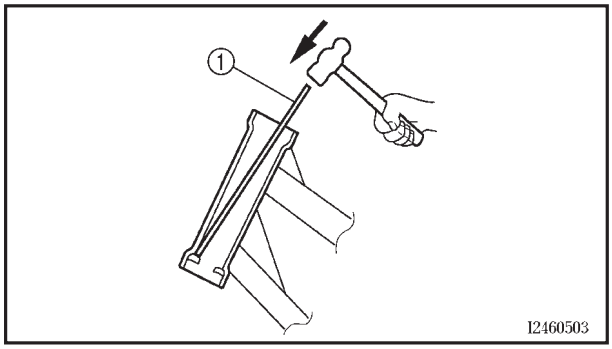
1. Wash:
 - bearing balls
 - bearing races

	Recommended cleaning solvent **Kerosene**



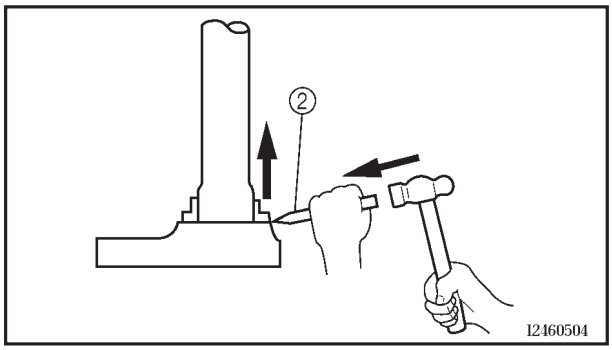
2. Check:
 - bearing balls ①
 - bearing races ②

 Damage/pitting → Replace.



3. Replace:
 - bearing balls
 - bearing races

a. Remove the bearing races from the steering head pipe with a long rod ① and hammer.
b. Remove the bearing race from the front fork assembly with a floor chisel ② and hammer.



CAUTION:

If the bearing race is not installed properly, the steering head pipe could be damaged.

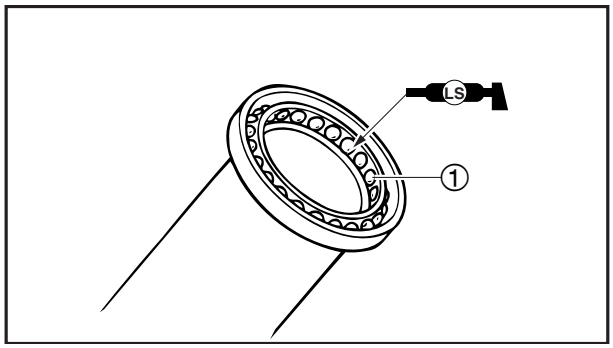
NOTE:

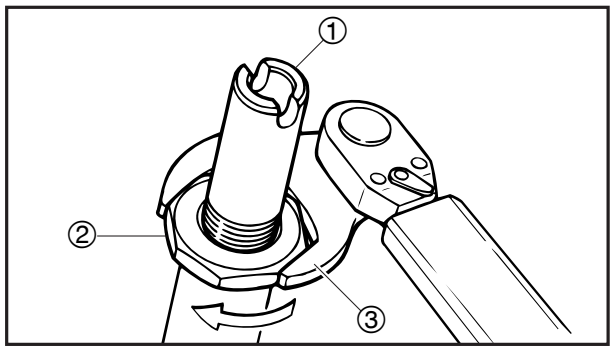
Always replace the balls and bearing races as a set.

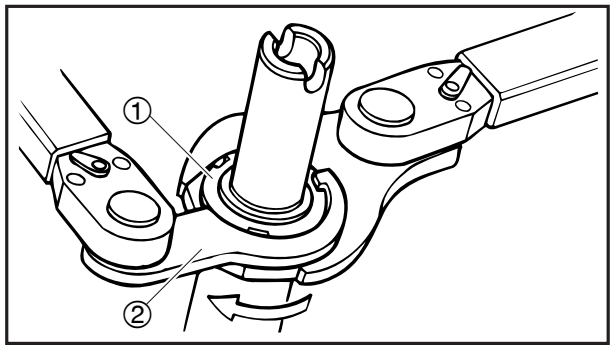
4. Check:
 - front fork assembly

 (along with the steering stem)

 Bends/cracks/damage → Replace.







EAS00684

INSTALLING THE STEERING HEAD

1. Lubricate:
 - bearing balls ①
 - bearing races

Recommended lubricant
Lithium-soap-based grease

2. Install:
 - front fork assembly ①
 - upper bearing inner race ②

7 Nm (0.7 m • kg, 5.1 ft • lb)

(with the ring nut wrench ③)

3. Install:
 - ring nut ①

30 Nm (3.0 m • kg, 21.7 ft • lb)

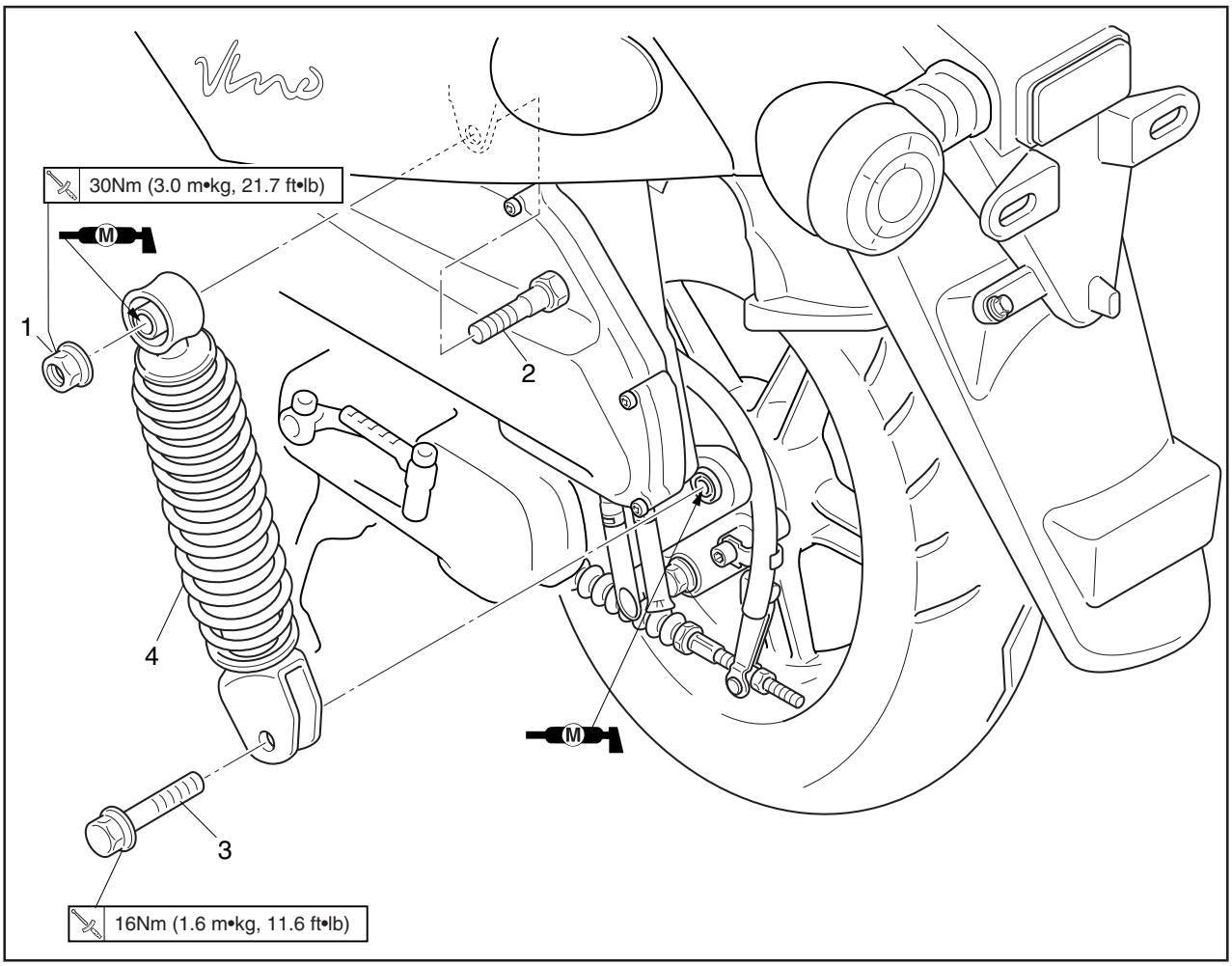
(with the ring nut wrench ②)

Ring nut wrench
90890-01403
YU-A9472

Refer to “CHECKING THE STEERING HEAD” in chapter 3.

EAS00685

REAR SHOCK ABSORBER ASSEMBLY



Order	Job/Part	Q'ty	Remarks
	Removing the rear shock absorber assembly		Remove the parts in the order listed.
1	Rear shock absorber assembly upper nut	1	
2	Rear shock absorber assembly upper bolt	1	
3	Rear shock absorber assembly lower bolt	1	
4	Rear shock absorber assembly	1	For installation, reverse the removal procedure.

EAS00692

REMOVING THE REAR SHOCK ABSORBER ASSEMBLY

1. Stand the scooter on a level surface.

⚠ WARNING

Securely support the scooter so that there is no danger of it falling over.

NOTE:

Place the scooter on a suitable stand so that the rear wheel is elevated.

2. Remove:
 - rear shock absorber nut (upper)
 - rear shock absorber bolt (lower)

EAS00695

CHECKING THE REAR SHOCK ABSORBER ASSEMBLY

1. Check:
 - rear shock absorber rod
 Bend/damage → Replace the rear shock absorber assembly.
 - rear shock absorber
 Oil leak → Replace the rear shock absorber assembly.
 - spring
 Damage/wear → Replace the rear shock absorber assembly.
 - bushing
 Damage/wear → Replace.
 - dust seal
 Damage/wear → Replace.
 - bolts
 Bends/damage/wear → Replace.

EAS00698

INSTALLING THE REAR SHOCK ABSORBER ASSEMBLY

1. Lubricate:
 - spacer
 - bush

	Recommended lubricant **Molybdenum disulfide grease**

2. Install:
 - rear shock absorber assembly

3. Tighten:
 - rear shock absorber assembly upper nut

	30 Nm (3.0 m • kg, 21.7 ft • lb)

 - rear shock absorber assembly lower bolt

	16 Nm (1.6 m • kg, 11.6 ft • lb)

CHAPTER 5
ENGINE

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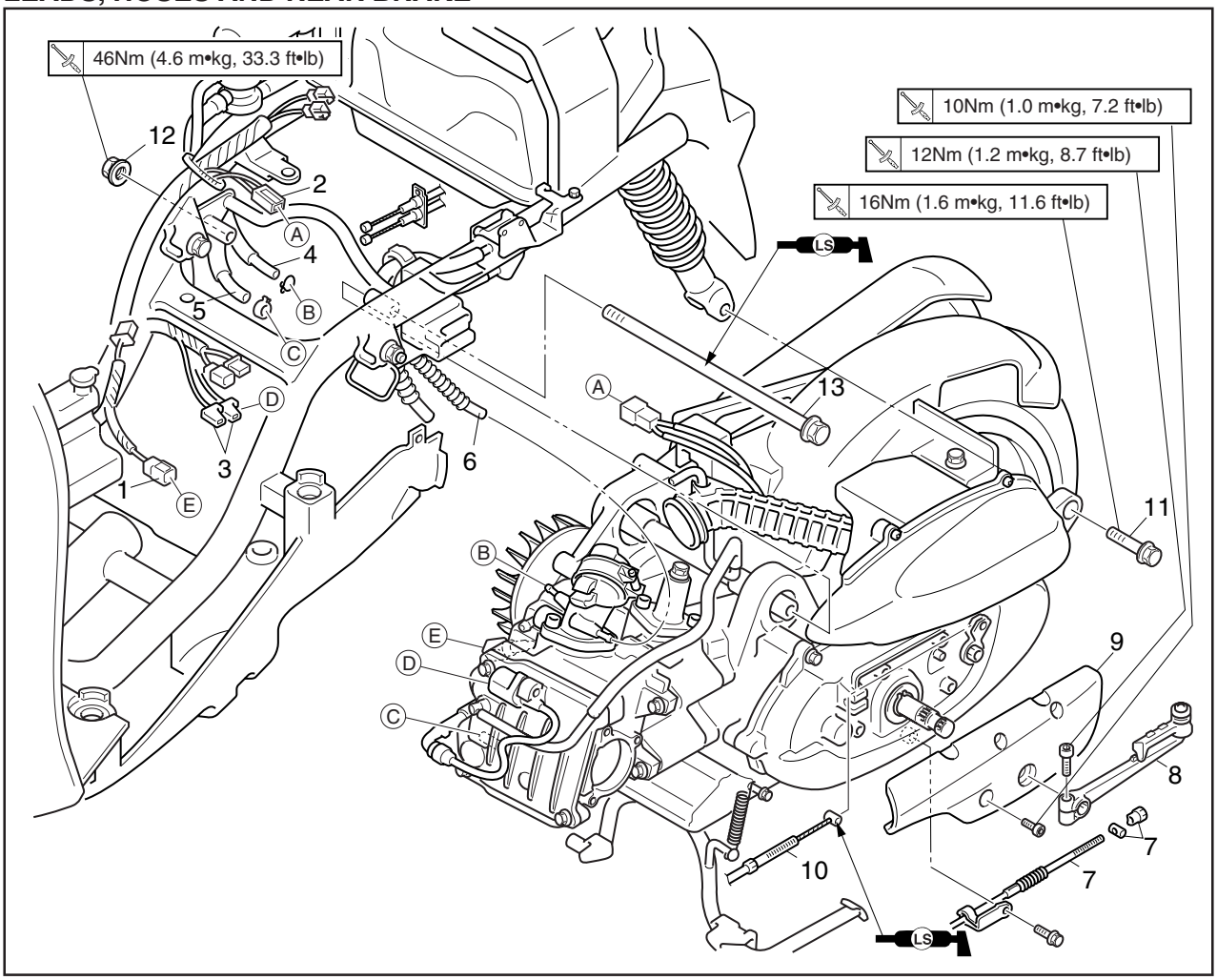
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EAS00188

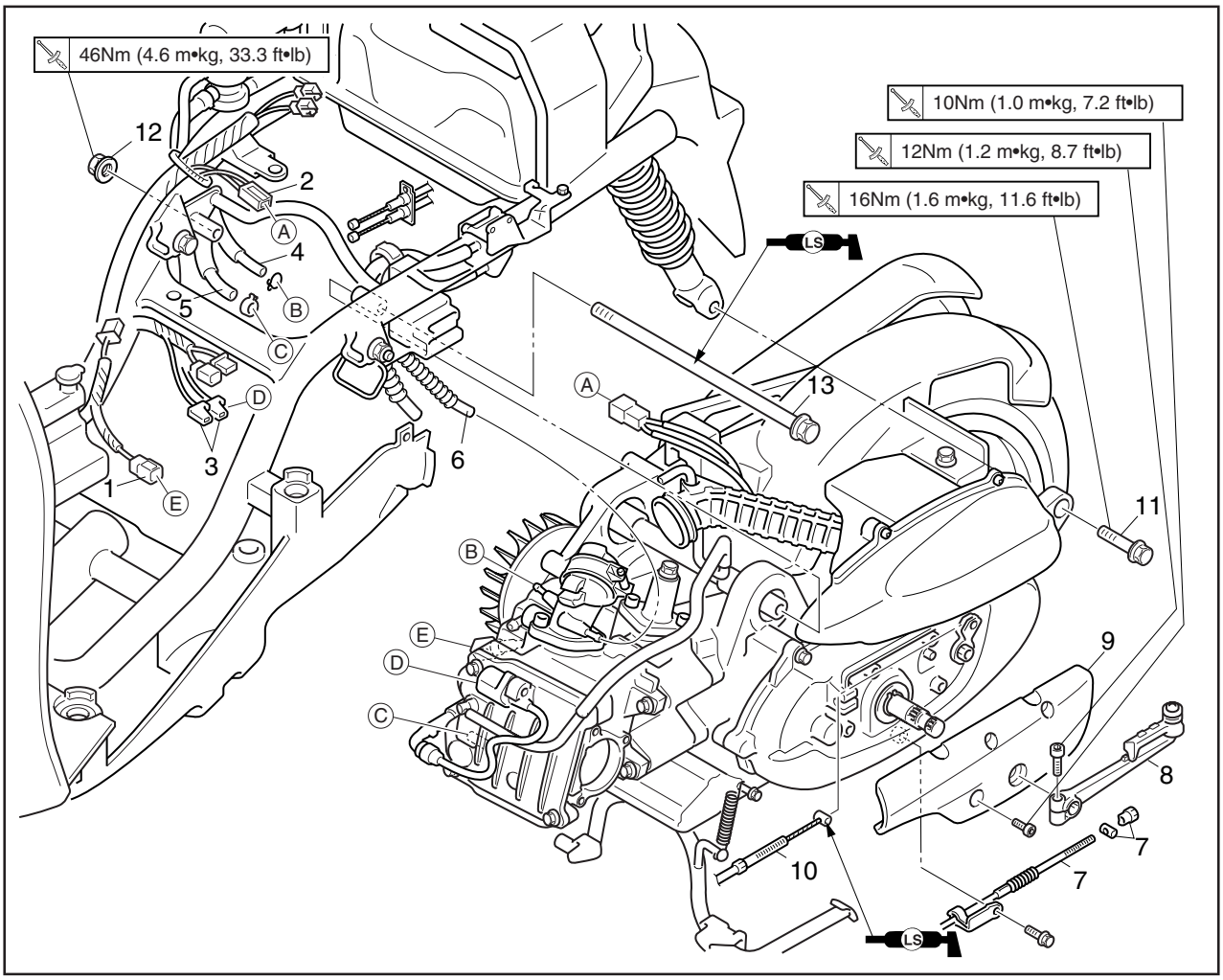
ENGINE

ENGINE

LEADS, HOSES AND REAR BRAKE

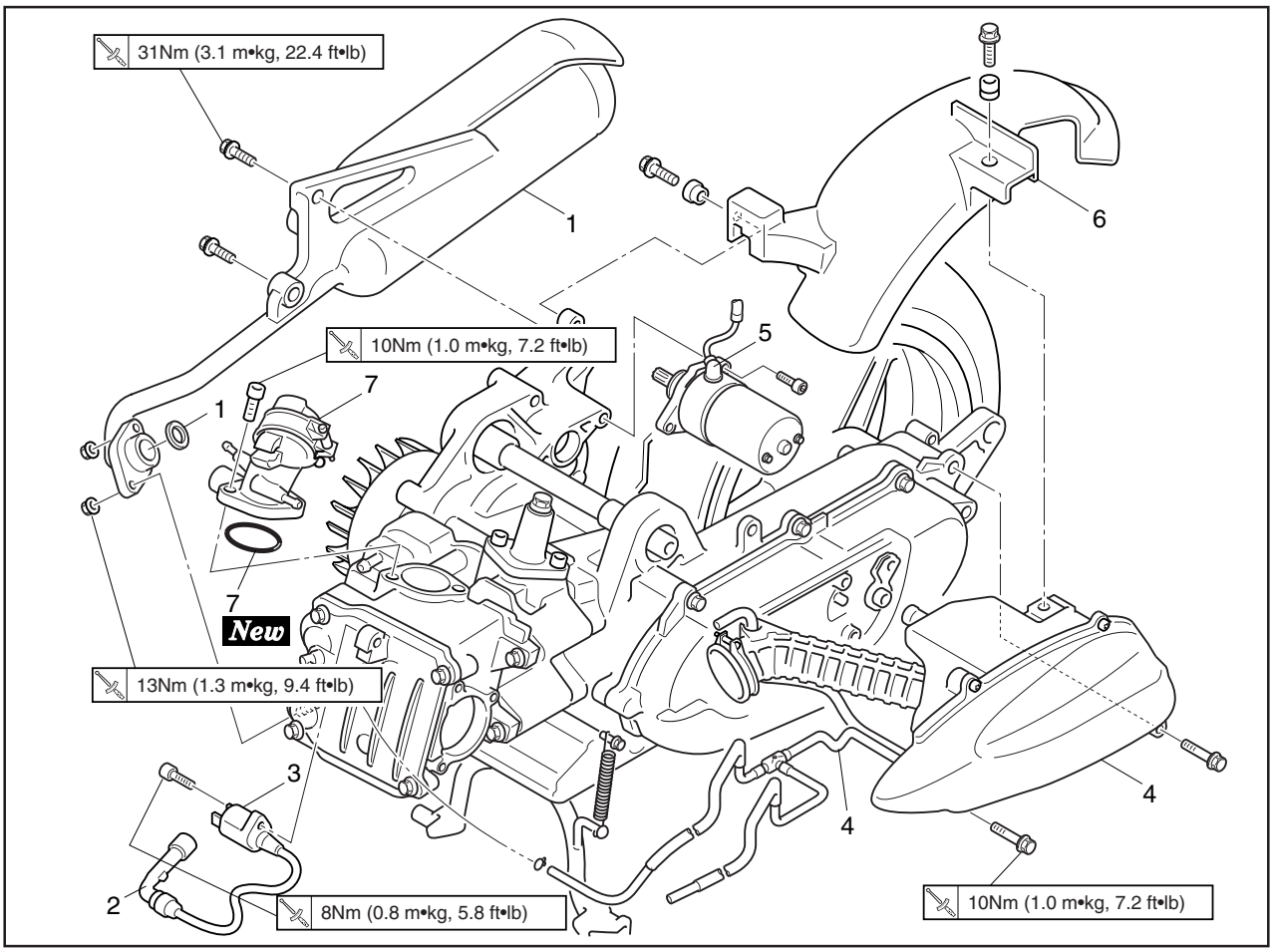


Order	Job/Part	Q'ty	Remarks
	Removing the leads, hoses and rear brake		Remove the parts in the order listed.
	Seat/Trunk/Rear carrier		Refer to "COVER AND PANEL"in chapter 3.
	Battery cover/Battery holder		
	Battery/Front cover		
	Side cover(left and right)/Rear cover		
	Footrest board side cover mole (left and right)		
	Mat/Footrest board		
	Coolant		Drain. Refer to "CHANGING THE COOLANT"in chapter 3.
	Radiator		Refer to "COOLING SYSTEM"in chapter 6.
	Thermostat housing		
	Water pump assembly		
	Carburetor		Refer to "CARBURETOR"in chapter 7.
1	Thermo unit lead	1	Disconnect.

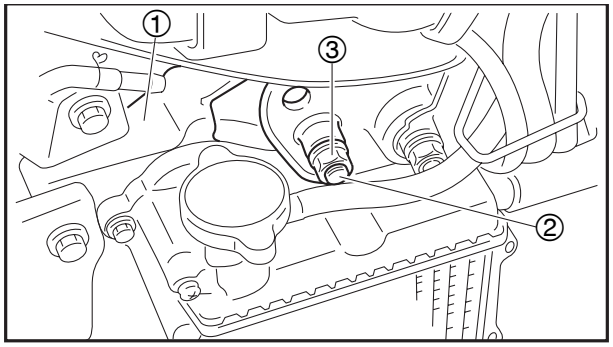


Order	Job/Part	Q'ty	Remarks
	AC magneto lead		Refer to "STARTER CLUTCH AND AC MAGNETO".
2	Starting motor lead/Earth lead	1	Disconnect.
3	Ignition primary coil lead	1	Disconnect.
4	Vacuum hose(to air cut-off valve)	1	
5	Hose(to air cut-off valve)	1	
6	Vacuum hose(to fuel cock)	1	
7	Rear brake cable/Adjuster/Pin	1/1/1	
8	Kickstarter	1	
9	Rear wheel lock cable cover	1	
10	Rear wheel lock cable	1	
11	Rear shock absorber assembly lower bolt	1	Refer to " REAR SHOCK ABSORBER ASSEMBLY "in chapter 4.
12	Self lock nut	1	Refer to " INSTALLING THE ENGINE ".
13	Engine mounting bolt	1	
			For installation, reverse the removal procedure.

MANIFOLD, AIR FILTER AND MUFFLER ASSEMBLY



Order	Job/Part	Q'ty	Remarks
	Removing the manifold, air filter and muffler assembly		Remove the parts in the order listed.
	Rear brake cable(adjuster/pin)		Refer to "LEADS, HOSES AND REAR BRAKE".
	Rear wheel lock cable		
	Hose(to air cut-off valve)		
	Vacuum hose(to air cut-off valve)		
	Vacuum hose(to fuel cock)		
	Throttle cable kit		Refer to "CARBURETOR"in chapter 7.
	Auto choke lead		
	Throttle position sensor lead		
1	Muffler assembly/Gasket	1/1	
2	Spark plug cap	1	
3	Ignition coil	1	
4	Air filter assembly/Breather hose	1/1	
5	Starter motor assembly	1	
6	Rear fender	1	
7	Manifold/O-ring	1/1	
			For installation, reverse the removal procedure.



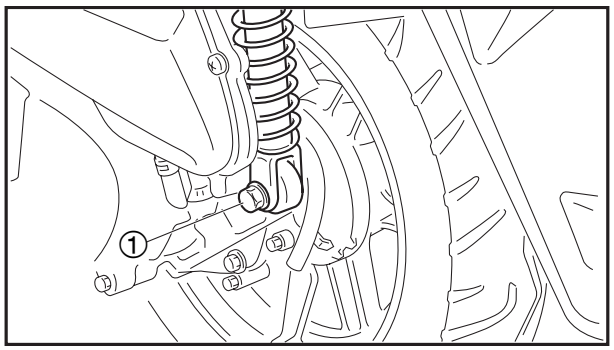
EAS00192
INSTALLING THE ENGINE

1. Install:
 - engine ①
 - engine mounting bolt ②
 - self lock nut③

NOTE:
Do not fully tighten the bolts.

2. Tighten:
 - self lock nut

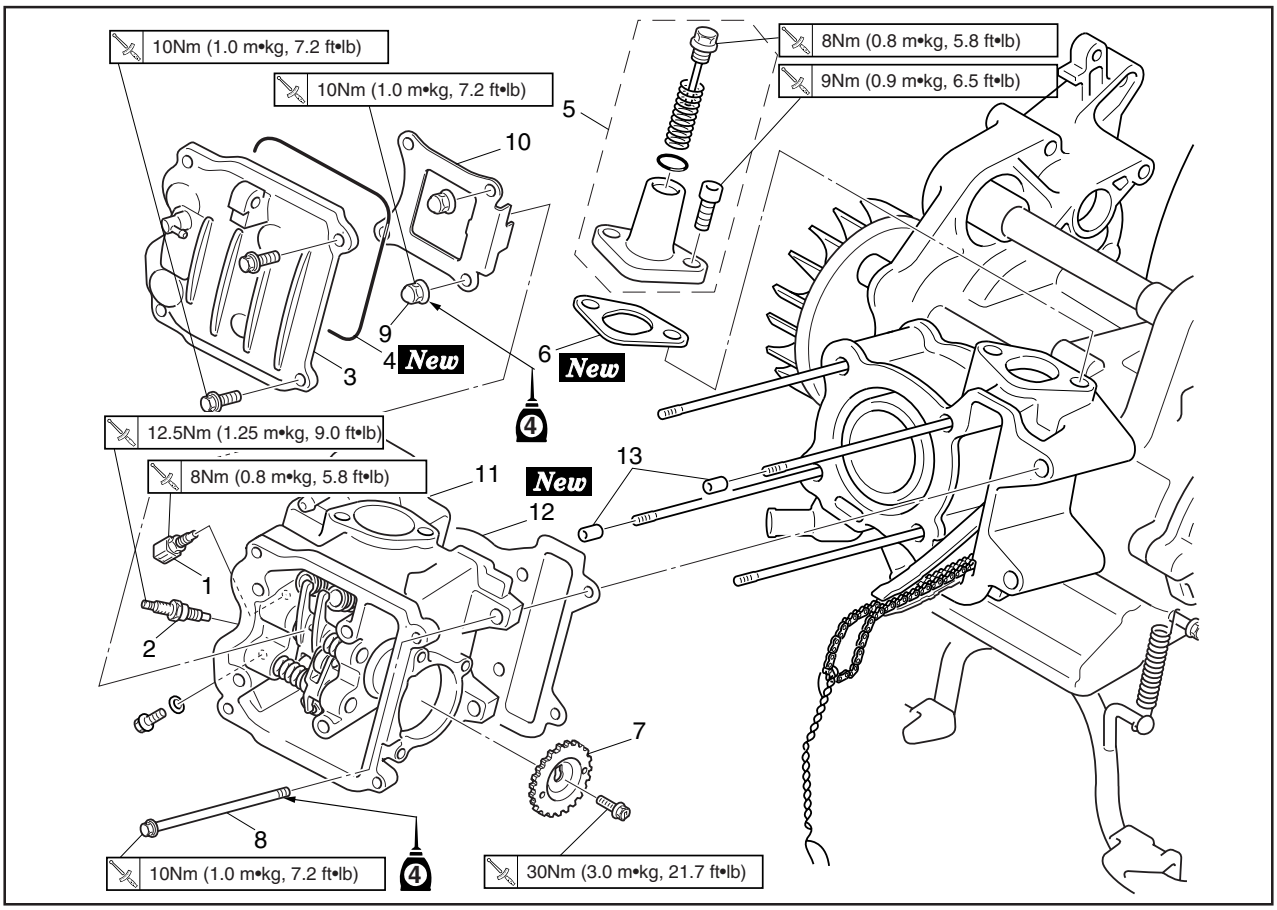
	46Nm(4.6 m • kg, 33.3 ft • lb)



3. Tighten:
 - rear shock absorber assembly lower bolt①

	16 Nm (1.6 m • kg, 11.6 ft • lb)

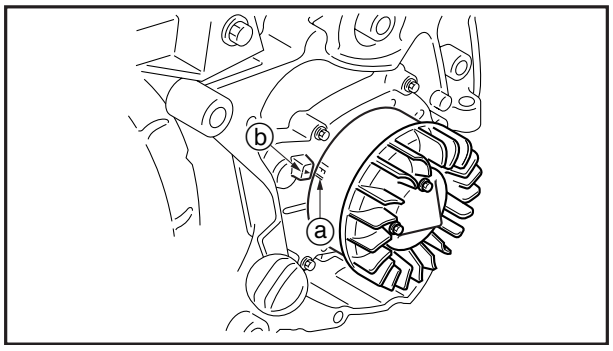
EAS00221
CYLINDER HEAD



Order	Job/Part	Q'ty	Remarks
	Removing the cylinder head		Remove the parts in the order listed.
	Muffler assembly		Refer to "MANIFOLD, AIR FILTER AND MUFFLER ASSEMBLY".
	Air filter assembly/Breather hose		
	Manifold/O-ring		
1	Thermostat unit	1	
2	Spark plug	1	
3	Cylinder head cover	1	
4	O-ring	1	
5	Timing chain tensioner assembly	1	
6	Timing chain tensioner gasket	1	
7	Camshaft sprocket	1	Refer to " REMOVING THE CYLINDER HEAD".
8	Bolt	2	
9	Nut	4	
10	Plate	1	
11	Cylinder head	1	
12	Cylinder head gasket	1	
13	Dowel pin	2	
			For installation, reverse the removal procedure.

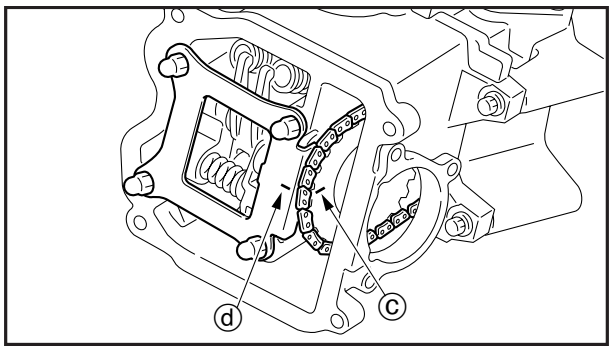
EAS00225
REMOVING THE CYLINDER HEAD

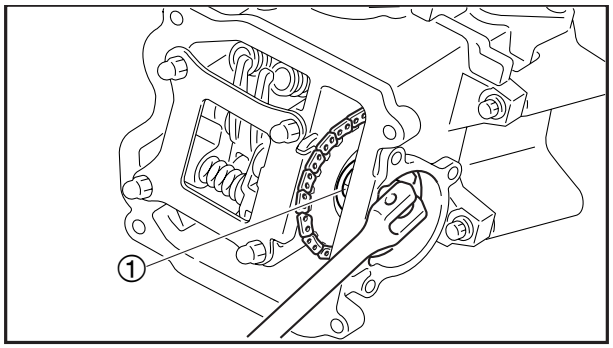
1. Remove :
 - crankcase cover (left)
 Refer to " BELT DRIVE".
 - cylinder head cover



2. Align:
 - "I" mark ⓐ on the magneto rotor (with the stationary pointer ⓑ on the crankcase cover)

a. Turn the primary fixed sheave counterclockwise.
b. When the piston is at TDC on the compression stroke, align the "I" mark ⓒ on the camshaft sprocket with the mark ⓓ on the plate.



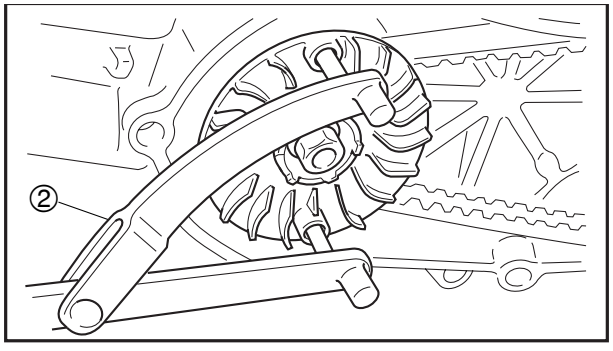


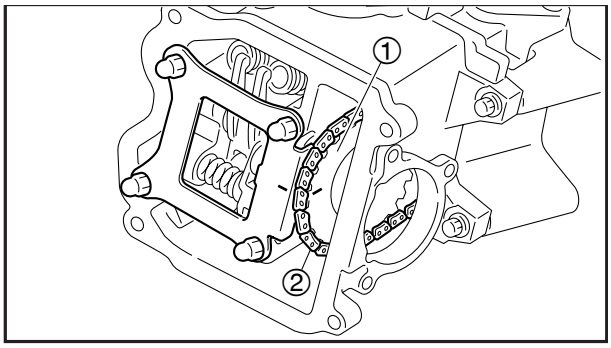
3. Loosen:
 - timing chain tensioner bolt
 - camshaft sprocket bolt ①

 While holding the crank bolt with a wrench②, remove the camshaft sprocket bolt ①.



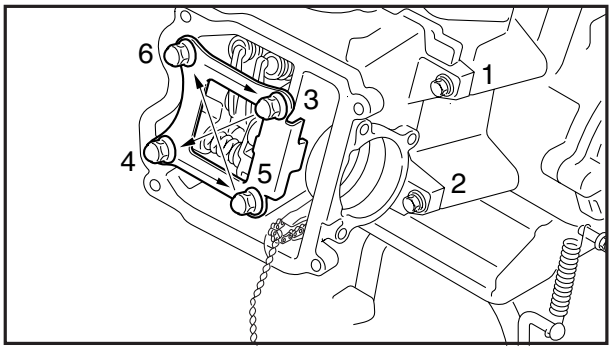
Rotor holding tool
90890-01235
YU-01235





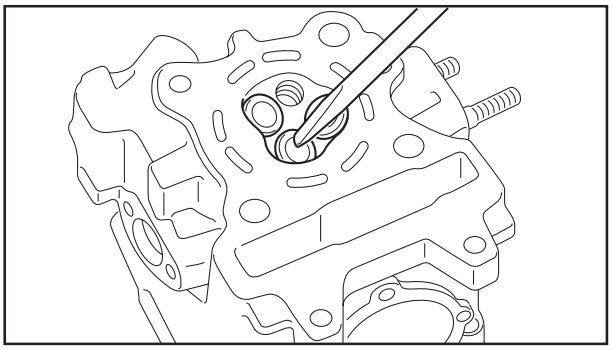
4. Remove:
 - timing chain tensioner (along with the gasket)
 - camshaft sprocket ①
 - timing chain ②

NOTE:
To prevent the timing chain from falling into the crankcase, fasten it with a wire.



5. Remove:
 - cylinder head

NOTE:
- Loosen the nuts in the proper sequence as shown.
- Loosen each nut 1/2 of a turn at a time. After all of the nuts are fully loosened, remove them.

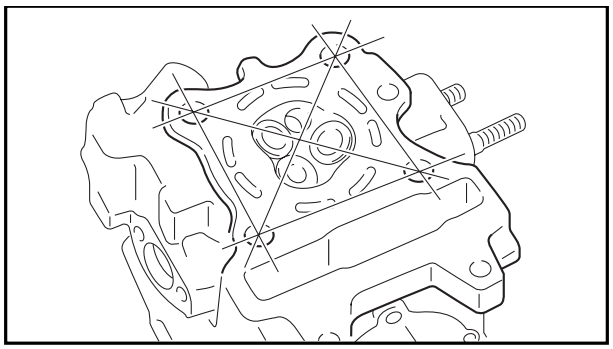


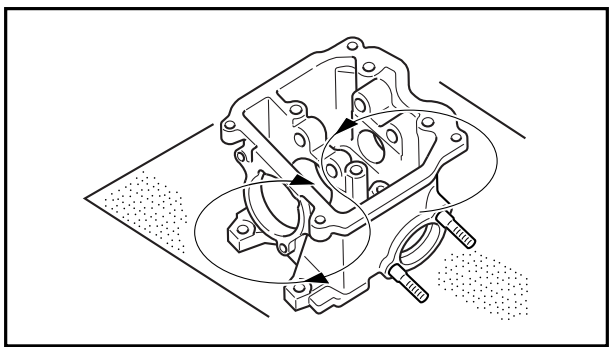
EAS00227
CHECKING THE CYLINDER HEAD

1. Eliminate:
 - combustion chamber carbon deposits (with a rounded scraper)

NOTE:
Do not use a sharp instrument to avoid damaging or scratching:
- spark plug bore thread
- valve seats

2. Check:
 - cylinder head
 Damage/scratches → Replace.



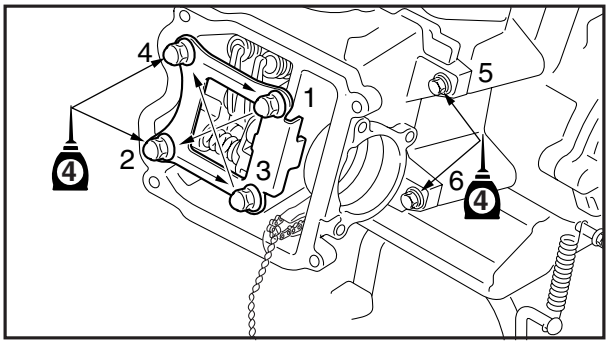


3. Measure:
 - cylinder head warpage
 Out of specification → Resurface the cylinder head.

Maximum cylinder head warpage
0.03 mm (0.001 in)

a. Place a straightedge and a thickness gauge across the cylinder head.
b. Measure the warpage.
c. If the limit is exceeded, resurface the cylinder head as follows.
d. Place a 400 ~ 600 grit wet sandpaper on the surface plate and resurface the cylinder head using a figure-eight sanding pattern.

NOTE:
To ensure an even surface, rotate the cylinder head several times.



EAS00231
INSTALLING THE CYLINDER HEAD

1. Install:
 - gasket **New**
 - dowel pins
2. Install:
 - cylinder head
3. Tighten:
 - cylinder head nuts

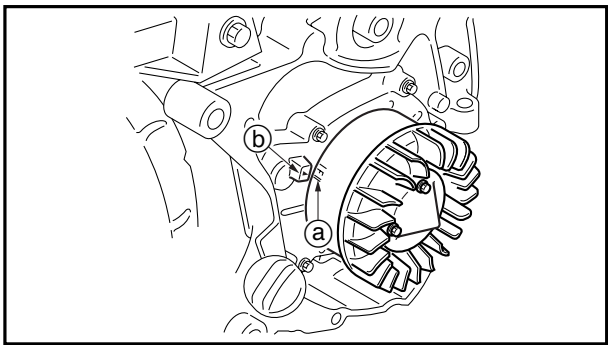
	10 Nm (1.0 m • kg, 7.2 ft • lb)

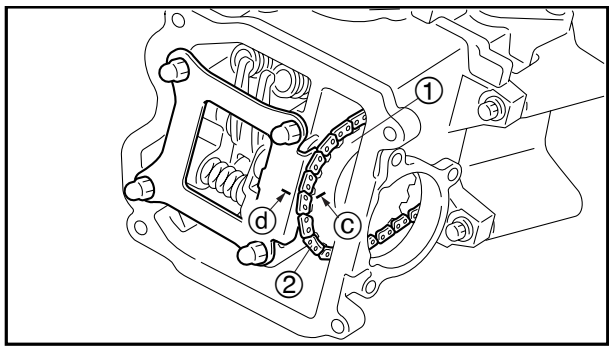
 - cylinder head bolts

	10 Nm (1.0 m • kg, 7.2 ft • lb)

NOTE:

- Lubricate the cylinder head nuts with engine oil.
- Tighten the cylinder head nuts in the proper tightening sequence as shown and torque them in two stages.





4. Install:
 - camshaft sprocket ①
 - timing chain ②

a. Turn the primary pulley counterclockwise.
b. Align the "I" mark ⓐ on the AC magneto rotor with the stationary pointer ⓑ on the crankcase cover.
c. Align the "I" mark ⓒ on the camshaft sprocket with the stationary pointer ⓓ on the plate.
d. Install the timing chain onto the camshaft sprocket, and then install the camshaft sprocket onto the camshaft.

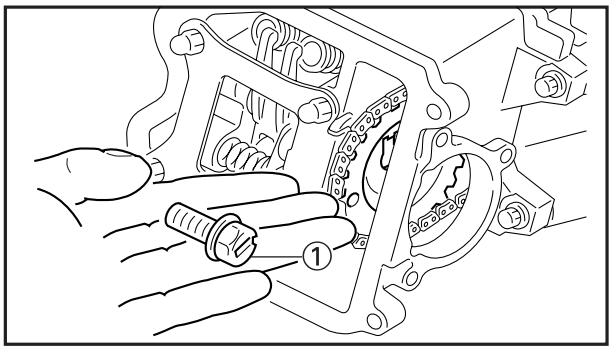
NOTE:

- When installing the camshaft sprocket, be sure to keep the timing chain as tight as possible on the exhaust side.
- Align the slot on the camshaft with the tab in the camshaft sprocket.

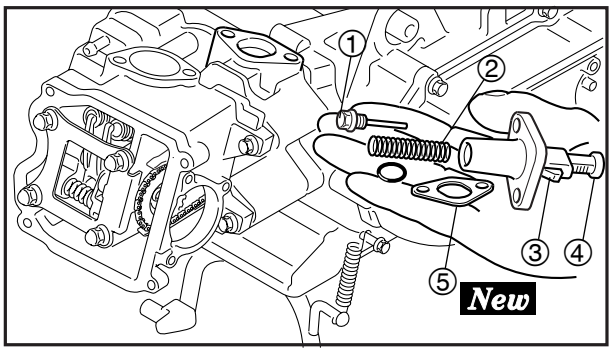
CAUTION:

Do not turn the crankshaft when installing the camshaft to avoid damage or improper valve timing.

e. While holding the camshaft, temporarily tighten the camshaft sprocket bolt.
f. Remove the wire from the timing chain.



5. Install
 - ●camshaft sprocket bolt ①



6. Install:
 - ●timing chain tensioner gasket **New**
 - ●timing chain tensioner

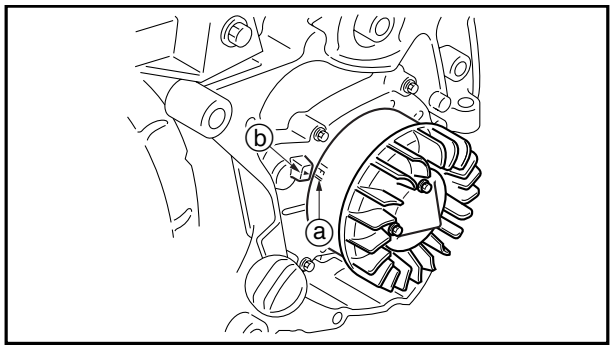
a. Remove the cap bolt ① and spring ②.
b. Release the timing chain tensioner one-way cam ③ and push the timing chain tensioner rod ④ all the way into the timing chain tensioner housing.
c. Install the timing chain tensioner and gasket ⑤ onto the cylinder.

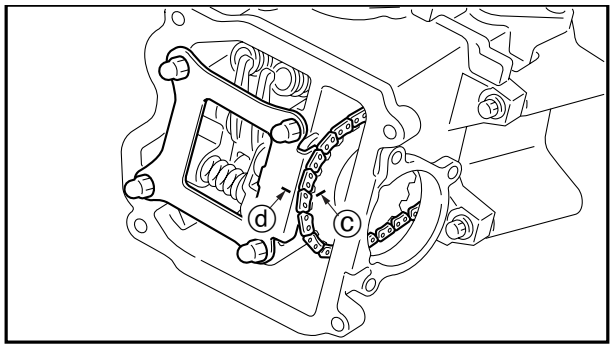
	Timing chain tensioner bolt **9 Nm (0.9 m • kg, 6.5 ft • lb)**

d. Install the spring ② and cap bolt ①.

	Cap bolt **8 Nm (0.8 m • kg, 5.8 ft • lb)**

7. Turn:
 - crankshaft
 (several turns counterclockwise)





8. Check:
 - "I" mark ⓐ
 Align the "I" mark on the AC magneto rotor with the stationary pointer ⓑ on the crankcase cover.
 - "I" mark ⓒ
 Align the "I" mark on the camshaft sprocket with the stationary pointer ⓓ on the plate.
 Out of alignment → Correct.
 Refer to the installation steps above.

9. Tighten:
 - camshaft sprocket bolt

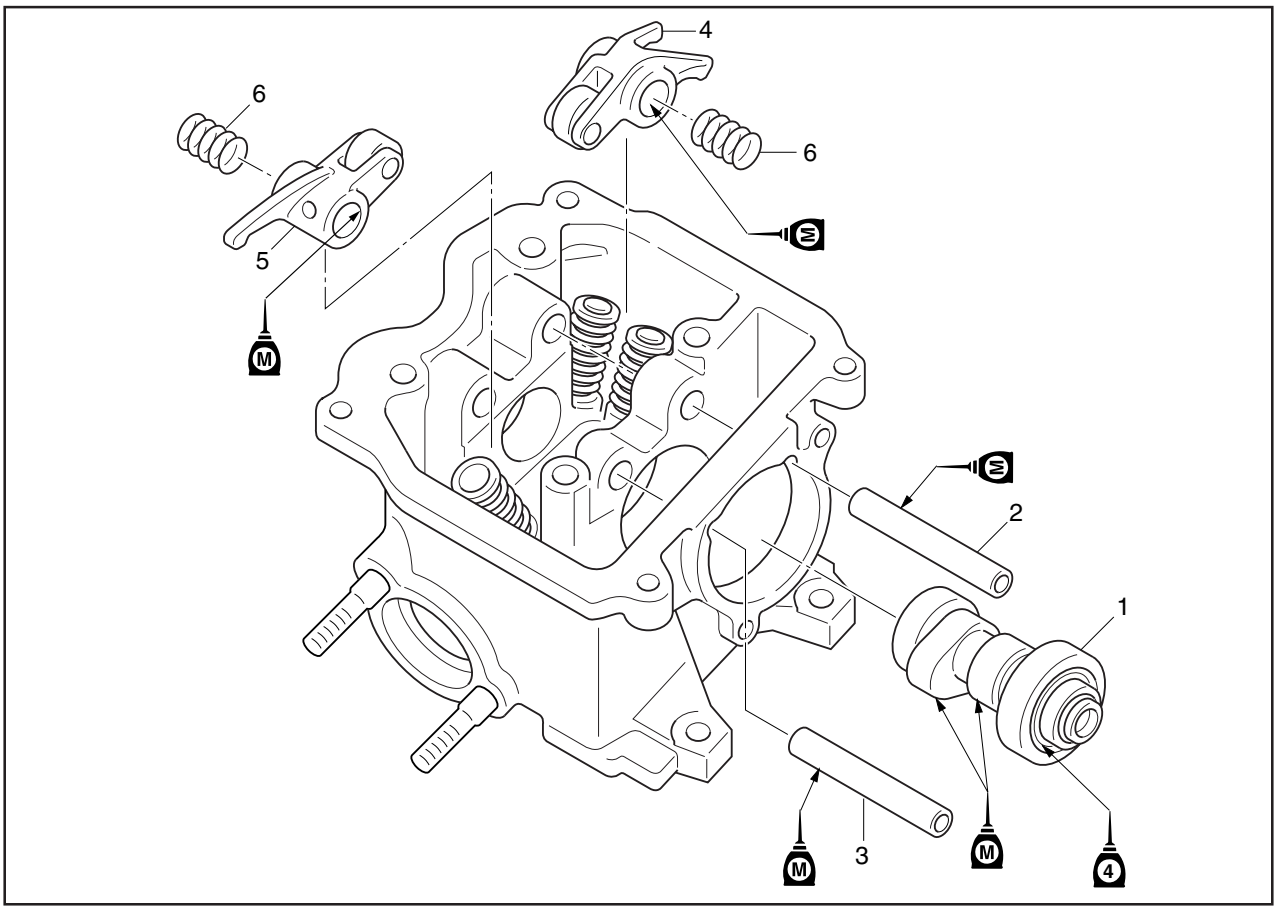
	30 Nm (3.0 m • kg, 21.7 ft • lb)

CAUTION:

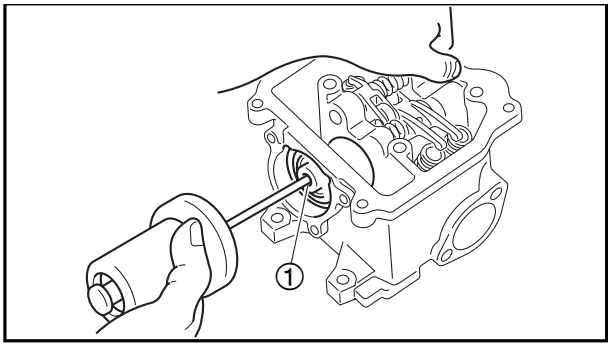
Be sure to tighten the camshaft sprocket bolts to the specified torque to avoid the possibility of the bolts coming loose and damaging the engine.

10. Measure:
 - valve clearance
 Out of specification → Adjust.
 Refer to "ADJUSTING THE VALVE CLEARANCE" in chapter 3.

THE ROCKER ARMS AND CAMSHAFT

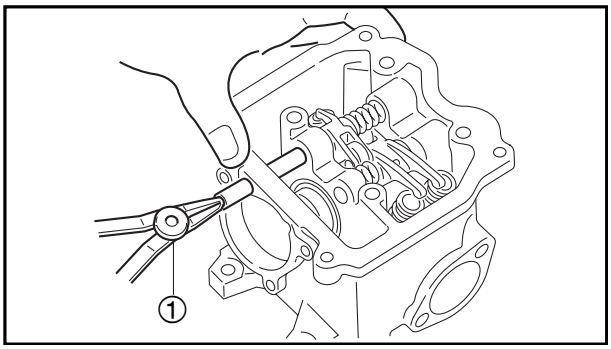


Order	Job/Part	Q'ty	Remarks
	Removing the rocker arms and camshaft		Remove the parts in the order listed.
	Cylinder head		Refer to "CYLINDER HEAD".
1	Camshaft	1	
2	Rocker arm shaft(intake)	1	
3	Rocker arm shaft(exhaust)	1	
4	Rocker arm(intake)	1	
5	Rocker arm(exhaust)	1	
6	Spring	2	
			For installation, reverse the removal procedure.



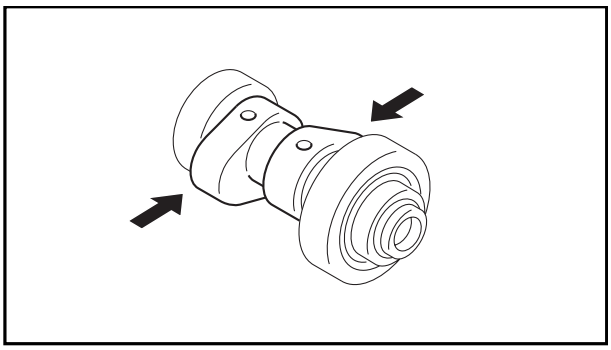
EAS00202
REMOVING THE ROCKER ARMS AND CAMSHAFT

1. Remove:
 - ●camshaft ①



2. Remove:
 - ●intake rocker arm shaft
 - ●exhaust rocker arm shaft
 - ●intake rocker arm
 - ●exhaust rocker arm

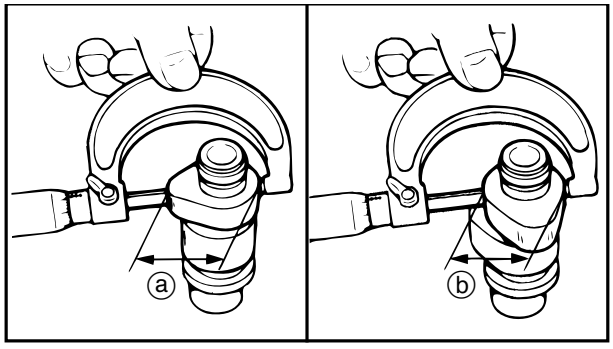
NOTE:
Remove the rocker arm shafts with the clip plier①.



EAS00205
CHECKING THE CAMSHAFT

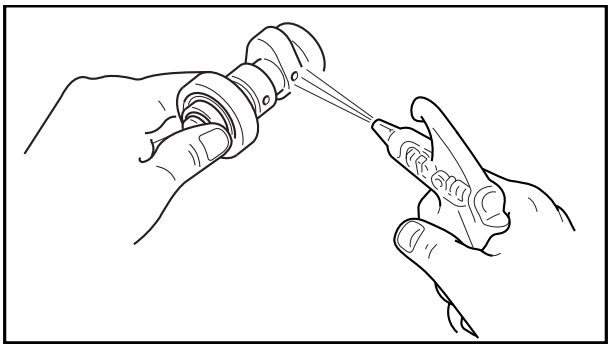
1. Check:
 - ●camshaft bushings
 Damage/wear → Replace.

2. Check:
 - ●camshaft lobes
 Blue discoloration/pitching/scratches → Replace the camshaft.

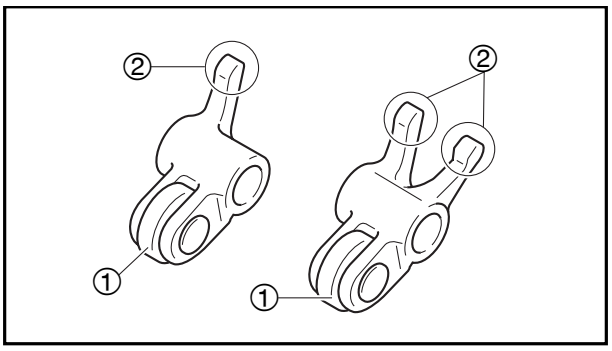


3. Measure:
 - ●camshaft lobe dimensions ⓐ and ⓑ
 Out of specification → Replace the camshaft.

Camshaft lobe dimension limit
Intake
ⓐ 30.158~30.258 mm (1.187~1.191 in)
<Limit>:30.058mm
ⓑ 25.082~25.182 mm (0.987~0.991 in)
<Limit>:24.982mm
Exhaust
ⓐ 30.158~30.258 mm (1.187~1.191 in)
<Limit>:30.058mm
ⓑ 25.020~25.120 mm (0.985~0.989 in)
<Limit>:24.920mm



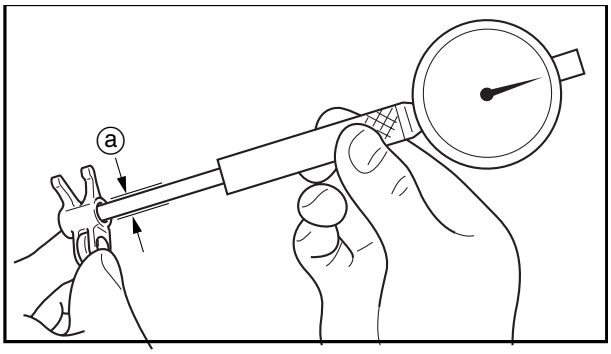
4. Check:
 - ●camshaft oil passage
 Obstruction → Blow out with compressed air.



EAS00206
CHECKING THE ROCKER ARMS AND ROCKER ARM SHAFTS

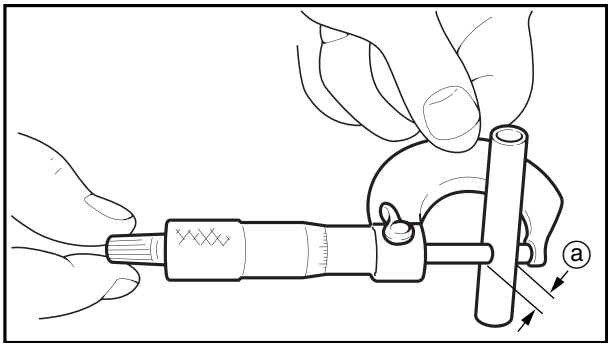
The following procedure applies to all of the rocker arms and rocker arm shafts.

1. Check:
 - ●rocker arm (camshaft touch surface①)
 - ●rocker arm (valve touch surface②)
 Damage/wear → Replace.
2. Check:
 - ●rocker arm shaft
 Blue discoloration/excessive wear/pitting/scratches → Replace or check the lubrication system.
3. Check:
 - ●camshaft lobe
 Excessive wear → Replace the camshaft.



4. Measure:
 - ●rocker arm inside diameter ⓐ
 Out of specification → Replace.

Rocker arm inside diameter
10 ~ 10.015 mm (0.393 ~ 0.394 in)



5. Measure:
 - ●rocker arm shaft outside diameter ⓐ
 Out of specification → Replace.

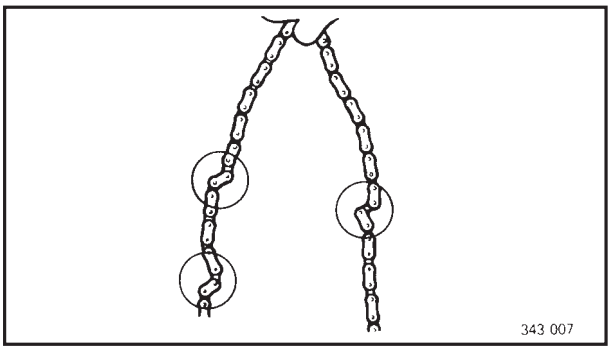
Rocker arm shaft outside diameter
9.981 ~ 9.991 mm (0.392 ~ 0.393 in)

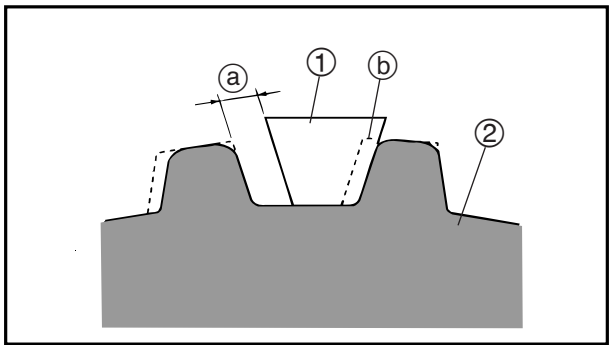
6. Calculate:
 - ●rocker-arm-to-rocker-arm-shaft clearance

NOTE:
Calculate the clearance by subtracting the rocker arm shaft outside diameter from the rocker arm inside diameter.

Above 0.034 mm (0.001 in) → Replace the defective part(s).

Rocker-arm-to-rocker-arm-shaft clearance
0.009 ~ 0.034 mm (0.0004 ~ 0.001 in)





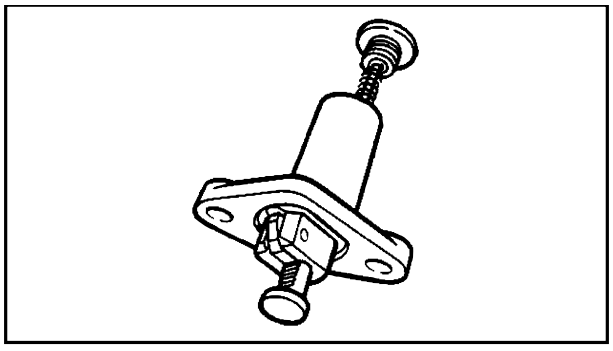
EAS00208
CHECKING THE TIMING CHAIN, CAMSHAFT SPROCKETS, AND TIMING CHAIN GUIDES

The following procedure applies to all of the camshaft sprockets and timing chain guides.

1. Check:
 - timing chain
 Damage/stiffness → Replace the timing chain and camshaft sprockets as a set.
2. Check:
 - camshaft sprocket
 More than 1/4 tooth wear ⓐ → Replace the camshaft sprockets and the timing chain as a set.

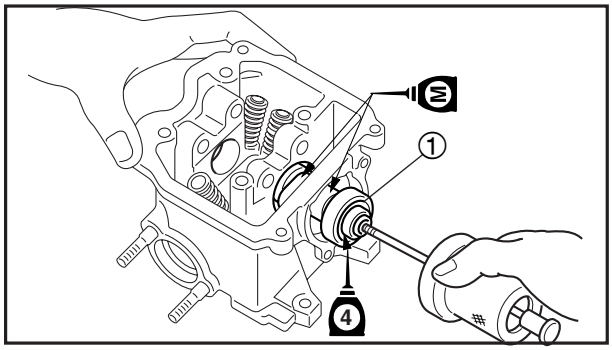
ⓐ 1/4 tooth
ⓑ Correct
① Timing chain roller
② Camshaft sprocket

3. Check:
 - timing chain guide (exhaust side)
 - timing chain guide (intake side)
 Damage/wear → Replace the defective part(s).



EAS00210
CHECKING THE TIMING CHAIN TENSIONER

1. Check:
 - timing chain tensioner
 Cracks/damage → Replace.
2. Check:
 - one-way cam operation
 Rough movement → Replace the timing chain tensioner housing.
3. Check:
 - cap bolt
 - o-ring **New**
 - spring
 - one-way cam
 - gasket **New**
 - timing chain tensioner rod
 Damage/wear → Replace the defective part(s).



EAS00220

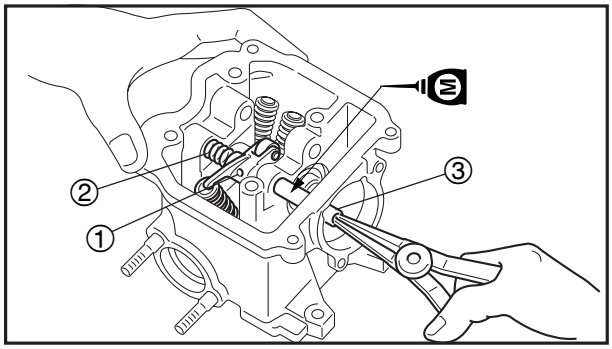
INSTALLING THE CAMSHAFT AND ROCKER ARMS

1. Lubricate:
 - camshaft ①

	Recommended lubricant **Camshaft** **Molybdenum disulfide oil** **Camshaft bearing** **Engine oil**

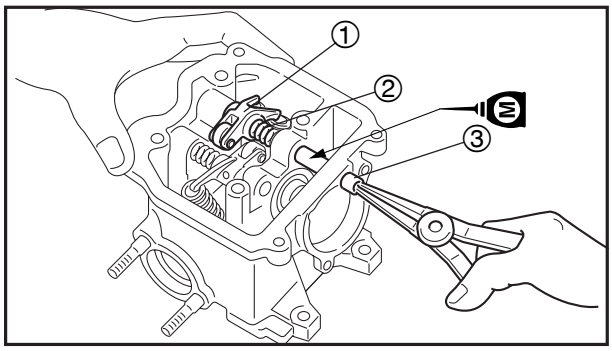
2. Lubricate:
 - rocker arm shafts

	Recommended lubricant **Molybdenum disulfide oil**



3. Install:
 - exhaust rocker arm ①
 - spring ②
 - exhaust rocker arm shaft ③

NOTE:
Make sure the exhaust rocker arm shaft is completely pushed into the cylinder head.

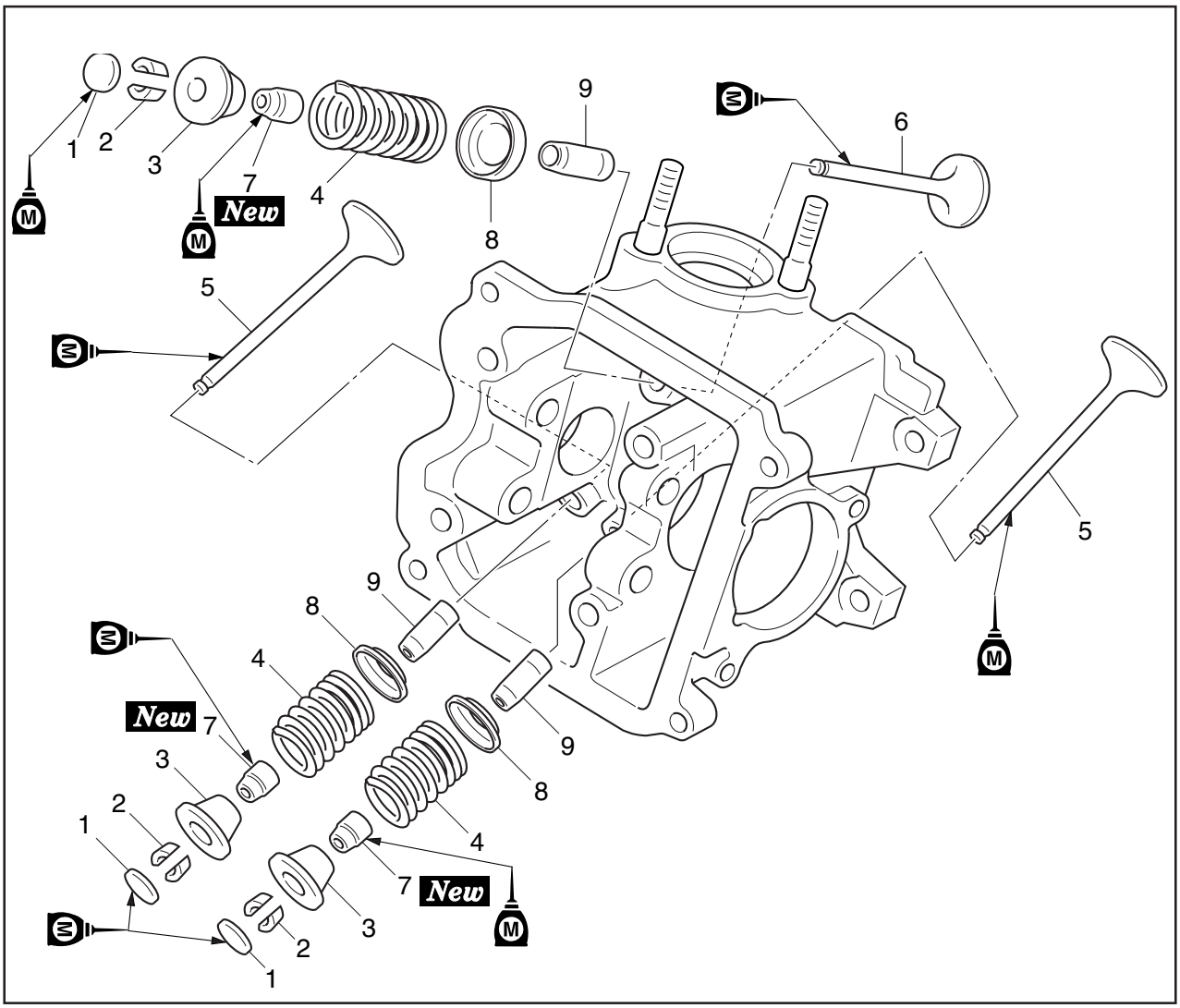


4. Install:
 - intake rocker arm ①
 - spring ②
 - intake rocker arm shaft ③

NOTE:
Make sure the intake rocker arm shaft is completely pushed into the cylinder head.

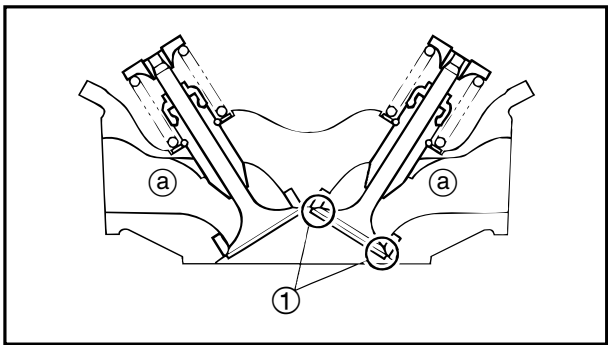
EAS00236

VALVES AND VALVE SPRINGS



Order	Job/Part	Q'ty	Remarks
	Removing the valves and valve springs		Remove the parts in the order listed.
	Cylinder head		Refer to "CYLINDER HEAD".
	Rocker arm and rocker arm shaft		Refer to "THE ROCKER ARMS AND CANSHAFT".
1	Valve pad	3	
2	Valve cotter	6	
3	Valve spring retainer	3	Refer to " INSTALLING THE VALVES AND VALVE SPRINGS ".
4	Valve spring	3	
5	Valve(intake)	2	
6	Valve(exhaust)	1	
7	Valve stem seal	3	
8	Valve stem seat	3	
9	Valve guide	3	
			For installation, reverse the removal procedure.

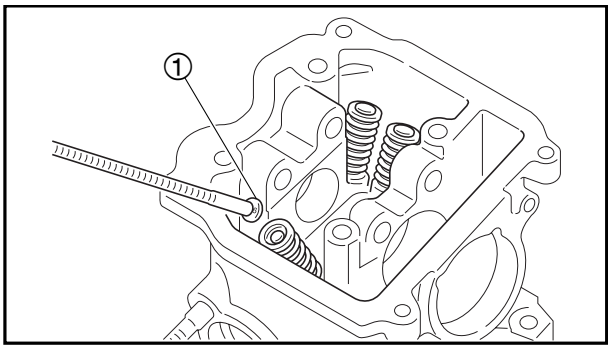
EAS00237
REMOVING THE VALVES
The following procedure applies to all of the valves and related components.
NOTE:
Before removing the internal parts of the cylinder head (e.g., valves, valve springs, valve seats), make sure the valves properly seal.



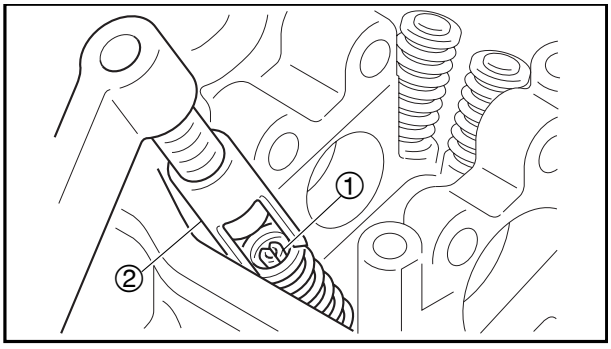
1. Check:
 - valve sealing
 Leakage at the valve seat → Check the valve face, valve seat, and valve seat width.
 Refer to "CHECKING THE VALVE SEATS".

a. Pour a clean solvent ⓐ into the intake and exhaust ports.
b. Check that the valves properly seal.

NOTE:
There should be no leakage at the valve seat ①.



2. Remove:
 - valve pads①

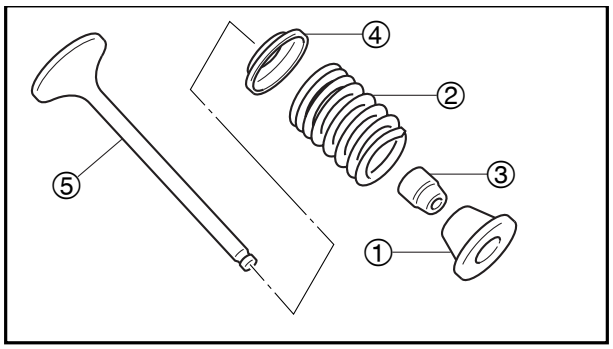


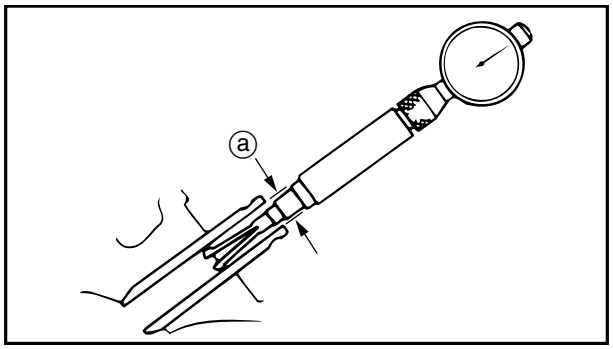
3 . Remove:
 - valve cotters ①

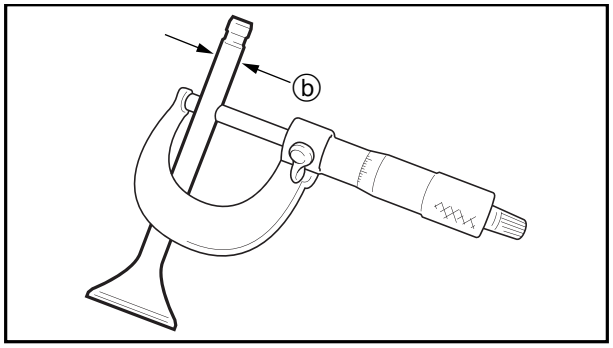
NOTE:
Remove the valve cotters by compressing the valve spring with the valve spring compressor and the valve spring compressor attachment ②.

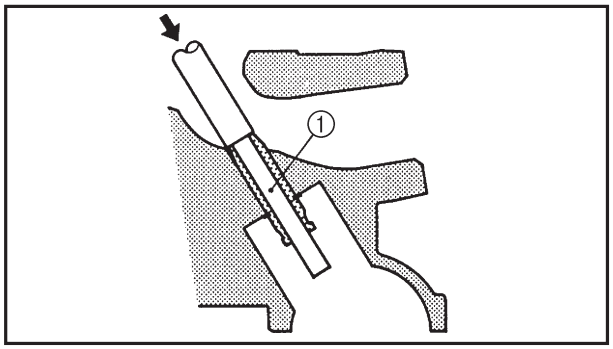


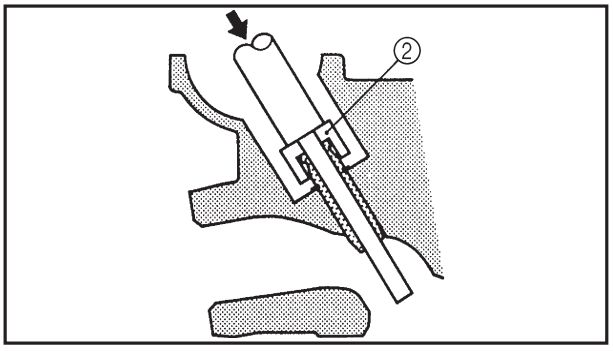
Valve spring compressor
90890-04109 (YM-04109)
Valve spring compressor attachment
90890-04148 (YM-04148)











4. Remove:
 - valve spring retainer ①
 - valve spring ②
 - valve stem seal ③
 - valve spring seat ④
 - valve ⑤

NOTE:
Identify the position of each part very carefully so that it can be reinstalled in its original place.

EAS00239

CHECKING THE VALVES AND VALVE GUIDES

The following procedure applies to all of the valves and valve guides.

1. Measure:
 - valve-stem-to-valve-guide clearance

Valve-stem-to-valve-guide clearance = Valve guide inside diameter ⓐ - Valve stem diameter ⓑ

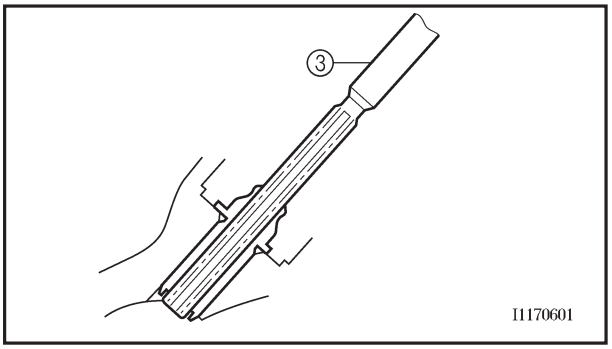
Out of specification → Replace the valve guide.

Valve-stem-to-valve-guide clearance
Intake
0.010 ~ 0.037 mm(0.0004~0.0015 in)
<Limit>: 0.08 mm(0.003 in)
Exhaust
0.025 ~ 0.052 mm(0.001~0.002 in)
<Limit>: 0.10 mm(0.004 in)

2. Replace:
 - valve guide

NOTE:
To ease valve guide removal and installation, and to maintain the correct fit, heat the cylinder head to 100°C in an oven.

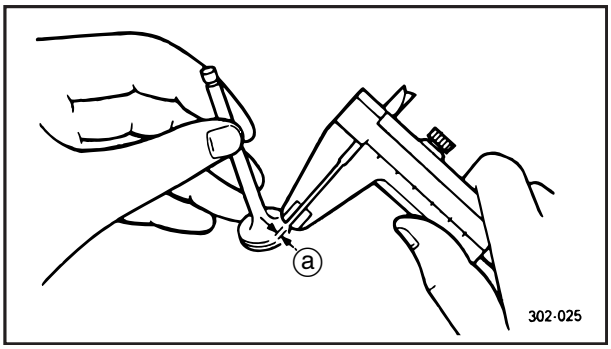
a. Remove the valve guide with the valve guide remover ①.
b. Install the new valve guide with the valve guide installer ② and valve guide remover ①.
c. After installing the valve guide, bore the valve guide with the valve guide reamer ③ to obtain the proper valve-stem-to-valve-guide clearance.



NOTE:
After replacing the valve guide, reface the valve seat.

Valve guide remover (4.0 mm)
90890-04111(YM-04111)
Valve guide installer (4.0 mm)
90890-04112(YM-04112)
Valve guide reamer (4.0 mm)
90890-04113(YM-04113)

3. Eliminate:
 - carbon deposits
 (from the valve face and valve seat)
4. Check:
 - valve face
 Pitting/wear → Grind the valve face.
 - valve stem end
 Mushroom shape or diameter larger than the body of the valve stem → Replace the valve.

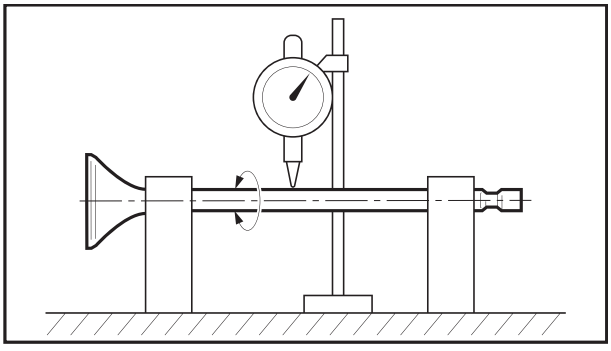


5. Measure:
 - valve margin thickness ⓐ
 Out of specification → Replace the valve.

Valve margin thickness
0.70 mm (0.028 in)

6. Measure:
 - valve stem runout
 Out of specification → Replace the valve.

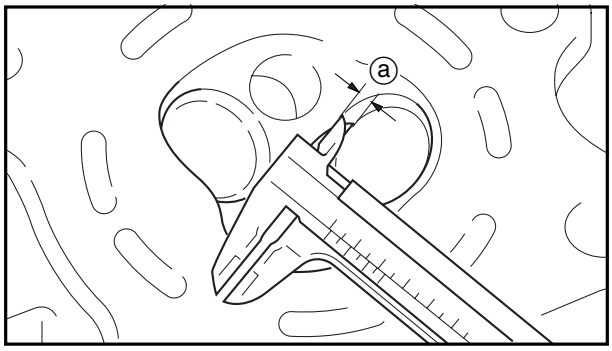
NOTE:
- When installing a new valve, always replace the valve guide.
- If the valve is removed or replaced, always replace the oil seal.



Valve stem runout
0.01 mm(0.0004 in)

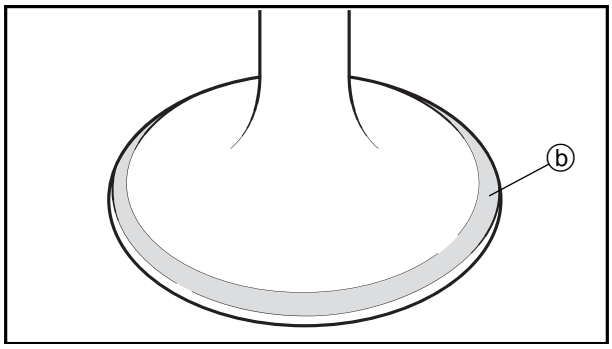
EAS00240
CHECKING THE VALVE SEATS
The following procedure applies to all of the valves and valve seats.

1. Eliminate:
 - carbon deposits
 (from the valve face and valve seat)
2. Check:
 - valve seat
 Pitting/wear → Replace the cylinder head.



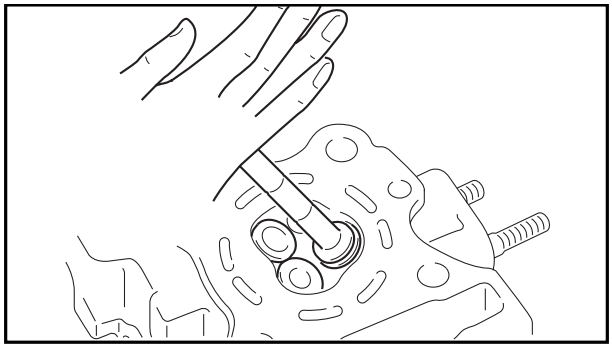
3. Measure:
 - valve seat width ⓐ
 Out of specification → Replace the cylinder head.

Valve seat width
Intake: 0.9 ~ 1.1 mm(0.035 ~ 0.043 in)
<Limit>: 1.6 mm(0.063 in)
Exhaust: 0.9 ~1.1 mm(0.035~0.043 in)
<Limit>: 1.6 mm(0.063 in)



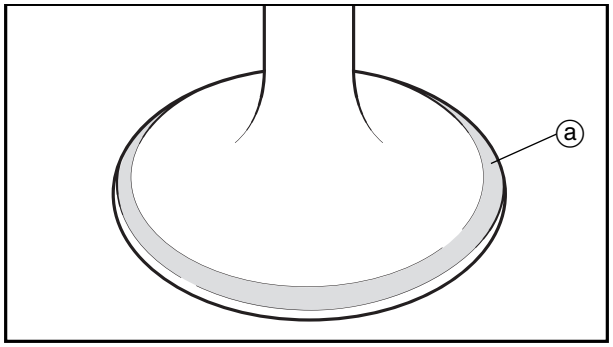
a. Apply Mechanic's blueing dye (Dykem) ⓑ onto the valve face.
b. Install the valve into the cylinder head.
c. Press the valve through the valve guide and onto the valve seat to make a clear impression.
d. Measure the valve seat width.

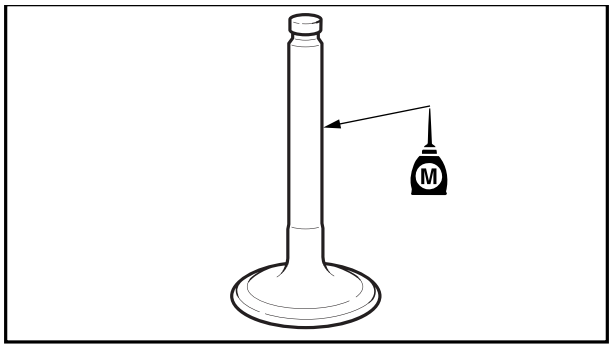
NOTE:
Where the valve seat and valve face contacted one another, the blueing will have been removed.

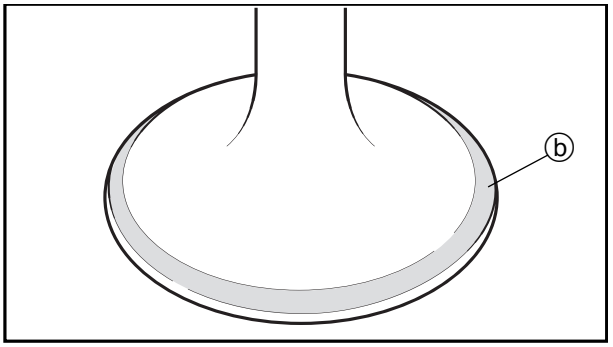


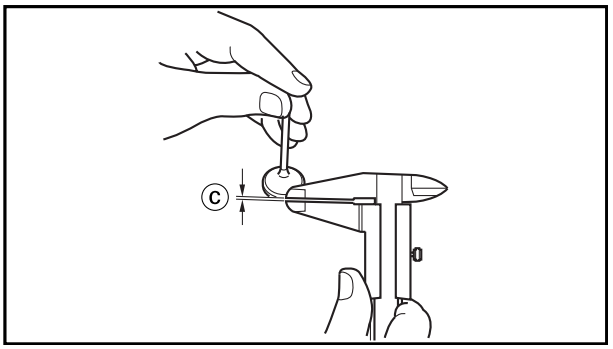
4. Lap:
 - valve face
 - valve seat

NOTE:
After replacing the cylinder head or replacing the valve and valve guide, the valve seat and valve face should be lapped.









a. Apply a coarse lapping compound ⓐ to the valve face.

CAUTION:

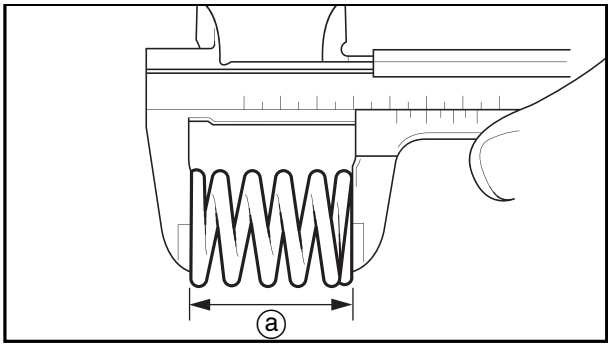
Do not let the lapping compound enter the gap between the valve stem and the valve guide.

b. Apply molybdenum disulfide oil onto the valve stem.
c. Install the valve into the cylinder head.
d. Turn the valve until the valve face and valve seat are evenly polished, then clean off all of the lapping compound.

NOTE:

For the best lapping results, lightly tap the valve seat while rotating the valve back and forth between your hands.

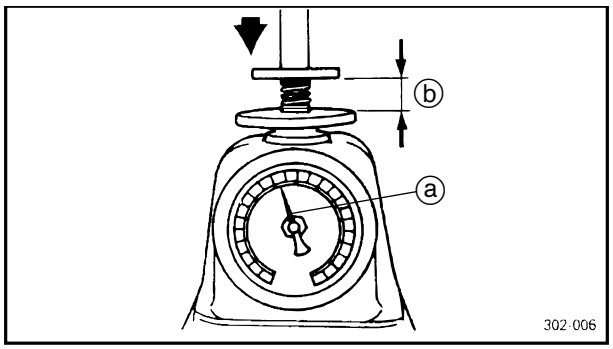
e. Apply a fine lapping compound to the valve face and repeat the above steps.
f. After every lapping procedure, be sure to clean off all of the lapping compound from the valve face and valve seat.
g. Apply Mechanic's blueing dye (Dykem) ⓑ onto the valve face.
h. Install the valve into the cylinder head.
i. Press the valve through the valve guide and onto the valve seat to make a clear impression.
j. Measure the valve seat width ⓒ again. If the valve seat width is out of specification, reface and lap the valve seat.



EAS00241
CHECKING THE VALVE SPRINGS
The following procedure applies to all of the valve springs.

1. Measure:
 - valve spring free length ⓐ
 Out of specification → Replace the valve spring.

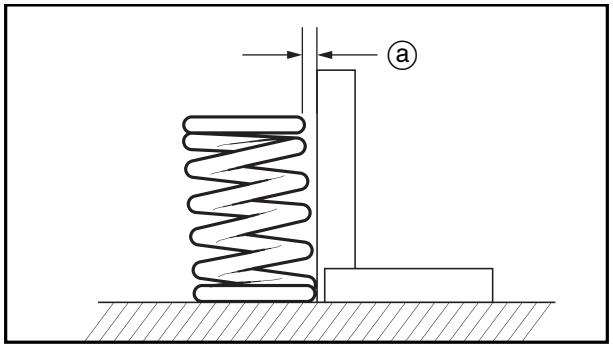
Valve spring free length
Intake valve spring
39.35 mm (1.549 in)
<Limit>: 37.38 mm (1.472 in)
Exhaust valve spring
41.57 mm (1.637 in)
<Limit>: 39.49 mm (1.555 in)



2. Measure:
 - compressed valve spring force ⓐ
 Out of specification → Replace the valve spring.

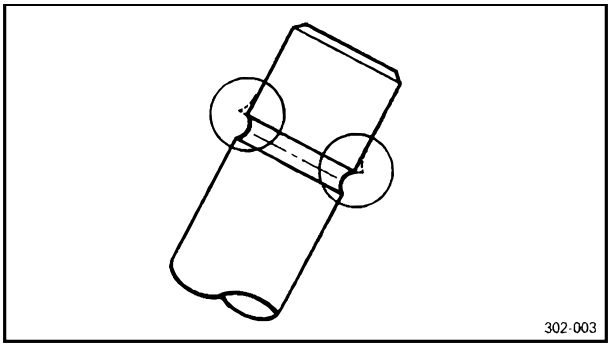
ⓑ Installed length

Compressed valve spring force (installed)
Intake valve spring
9.3~10.7 kg at 28 mm (20.5 ~ 23.6 lb at 1.102 in)
Exhaust valve spring
11.0 ~ 12.7 kg at 30 mm (24.3 ~ 28.0 lb at 1.181 in)



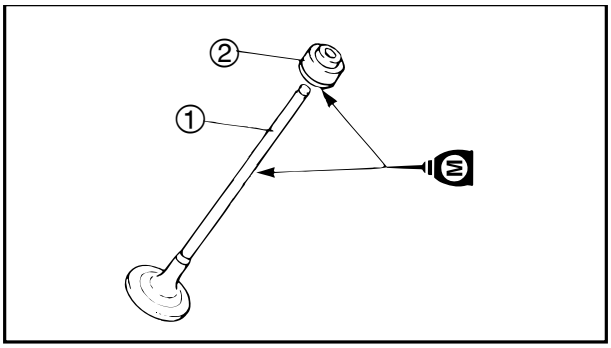
3. Measure:
 - valve spring tilt ⓐ
 Out of specification → Replace the valve spring.

Spring tilt limit
Intake valve spring
1.7 mm (0.067 in) (2.5°)
Exhaust valve spring
1.8 mm (0.071 in)(2.5°)



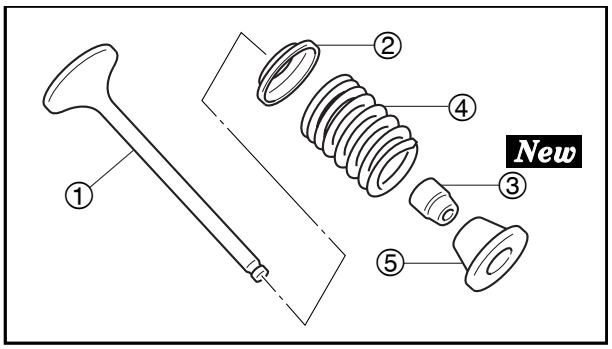
EAS00245
INSTALLING THE VALVES
The following procedure applies to all of the valves and related components.

1. Deburr:
 - valve stem end
 (with an oil stone)



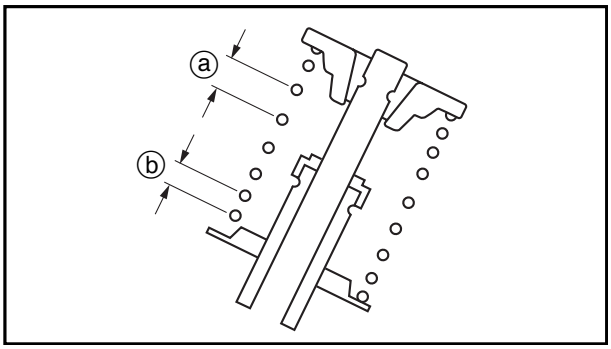
2. Lubricate:
 - valve stem ①
 - valve stem seal ②
 (with the recommended lubricant)

	Recommended lubricant **Molybdenum disulfide oil**

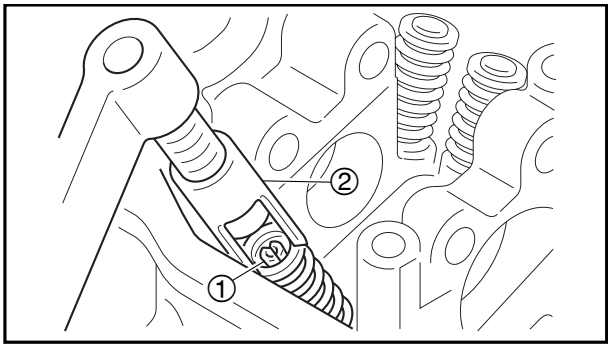


3. Install:
 - valve ①
 - valve spring seat ②
 - valve stem seal ③ New
 - valve spring ④
 - valve spring retainer ⑤
 (into the cylinder head)

NOTE:
Install the valve spring with the larger pitch ⓐ facing up.

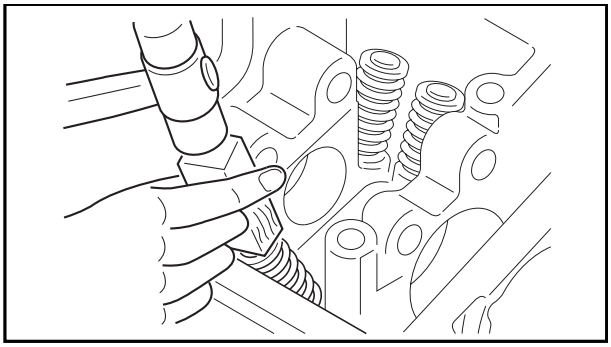


ⓑ Smaller pitch



4. Install:
 - valve cotters ①

NOTE:
Install the valve cotters by compressing the valve spring with the valve spring compressor and the valve spring compressor attachment ②.

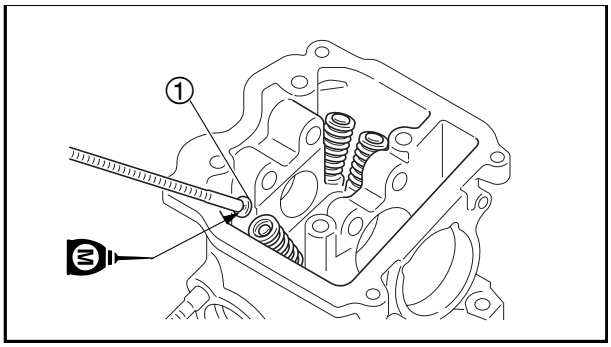




Valve spring compressor
90890-04109(YM-04109)
Valve spring compressor attachment
90890-04148(YM-04148)

5. To secure the valve cotters onto the valve stem, lightly tap the valve tip with a soft-face hammer.

CAUTION:
Hitting the valve tip with excessive force could damage the valve.

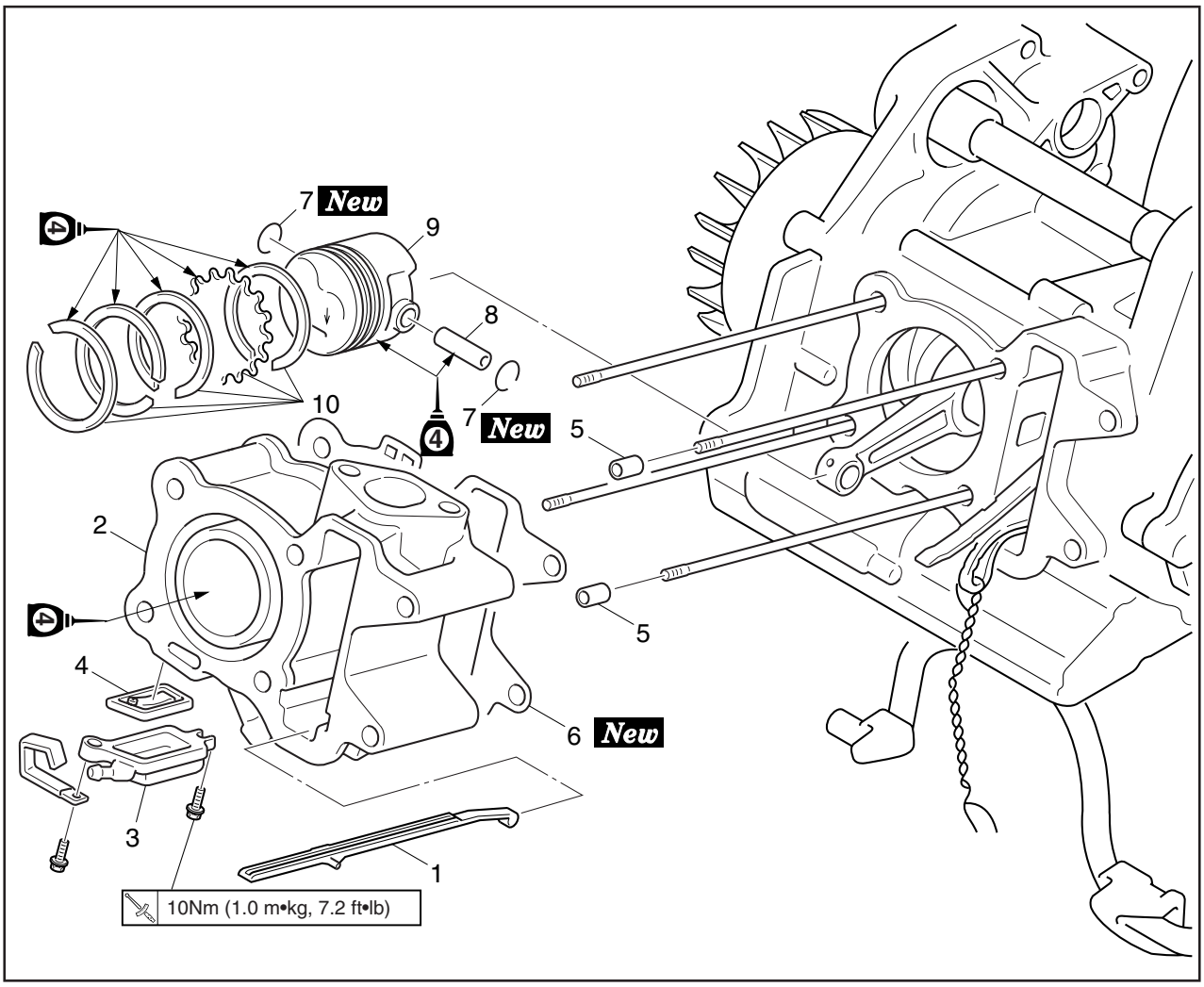


6. Install:
 valve pad ①

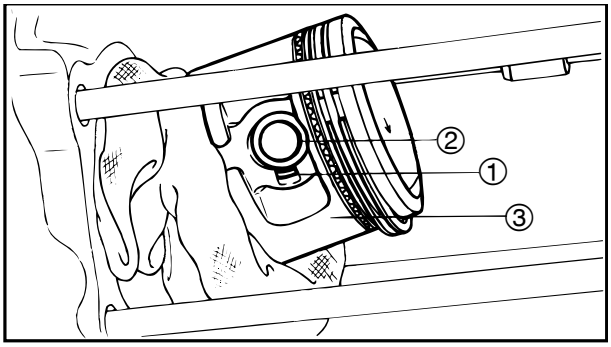
NOTE:
- Lubricate the valve pad with molybdenum disulfide oil.
- Each valve pad must be reinstalled in its original position.

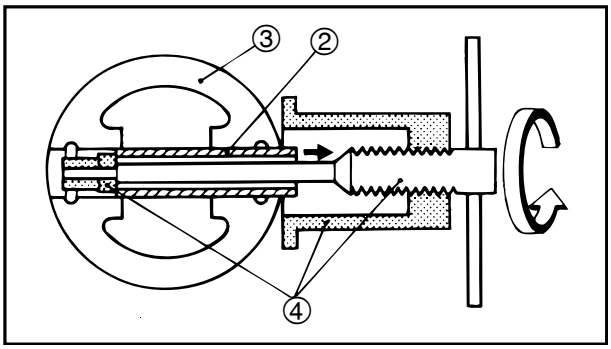
EAS00251

CYLINDER AND PISTON



Order	Job/Part	Q'ty	Remarks
	Removing the cylinder and piston		Remove the parts in the order listed.
	Cylinder head		Refer to "CYLINDER HEAD".
1	Timing chain guide(exhaust side)	1	
2	Cylinder	1	
3	Case cap	1	
4	Reed valve assembly	1	
5	Dowel pin	2	
6	Cylinder gasket	1	Refer to " INSTALLING THE PISTON AND CYLINDER".
7	Piston pin clip	2	
8	Piston pin	1	Refer to " REMOVING THE CYLINDER AND PISTON".
9	Piston	1	
10	Piston ring set	1	Refer to " INSTALLING THE PISTON AND CYLINDER".
			For installation, reverse the removal procedure.





EAS00253

REMOVING THE CYLINDER AND PISTON

1. Remove:
 - piston pin clip ①
 - piston pin ②
 - piston ③

CAUTION:

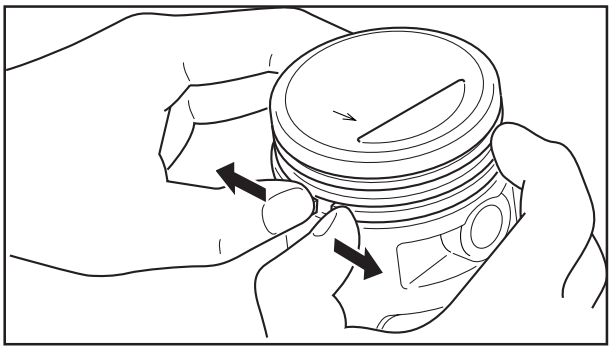
Do not use a hammer to drive the piston pin out.

NOTE:

- Before removing the piston pin clip, cover the crankcase opening with a clean rag to prevent the piston pin clip from falling into the crankcase.
- Before removing the piston pin, deburr the piston pin clip's groove and the piston's pin bore area. If both areas are deburred and the piston pin is still difficult to remove, remove it with the piston pin puller set④.



Piston pin puller set
90890-01304(YU-01304)



2. Remove:
 - top ring
 - 2nd ring
 - oil ring

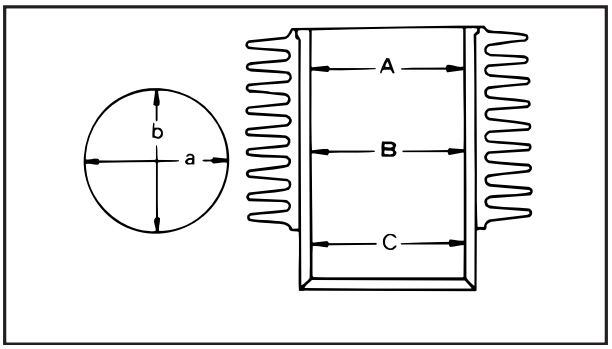
NOTE:

When removing a piston ring, open the end gap with your fingers and lift the other side of the ring over the piston crown.

EAS00261
CHECKING THE CYLINDER AND PISTON

1. Check:
 - piston wall
 - cylinder wall

 Vertical scratches → Replace the cylinder, and the piston and piston rings as a set.



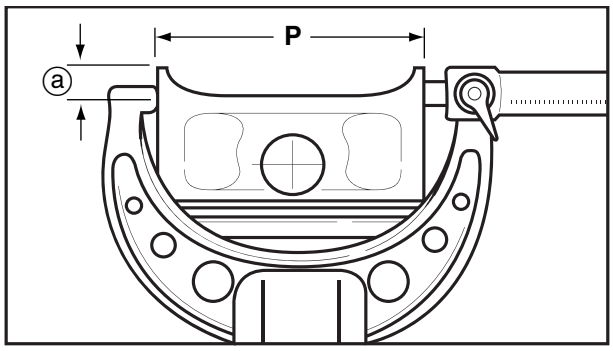
2. Measure:
 - piston-to-cylinder clearance

a. Please carry out the following inspections:
 - cylinder

 Measure the piston pin in both of its horizontal axis direction a and its right angle direction b at six positions of A, B, etc. with a cylinder gauge.
 Abrasion=Nax. value - min. value as measured at those six positions.
 When abrasion is beyond limit→ Replace it

Standard
38.000 ~ 38.010 mm(1.4961 ~ 1.4965 in)

b. If out of specification, replace the cylinder, and the piston and piston rings as a set.
c. Measure piston skirt diameter "P" with the micrometer.



ⓐ 5 mm (0.197 in) from the bottom edge of the piston

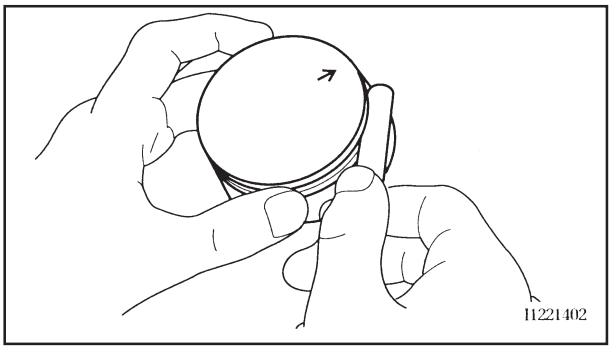
Piston size "P"
37.975 ~ 37.990 mm (1.495 ~ 1.496 in)

d. If out of specification, replace the piston and piston rings as a set.
e. Calculate the piston-to-cylinder clearance with the following formula.

Piston-to-cylinder clearance = Cylinder bore "C" - Piston skirt diameter "P"

Piston-to-cylinder clearance
0.010 ~ 0.035 mm (0.0004 ~ 0.0014 in)
<Limit>: 0.15 mm (0.006 in)

f. If out of specification, replace the cylinder, and the piston and piston rings as a set.

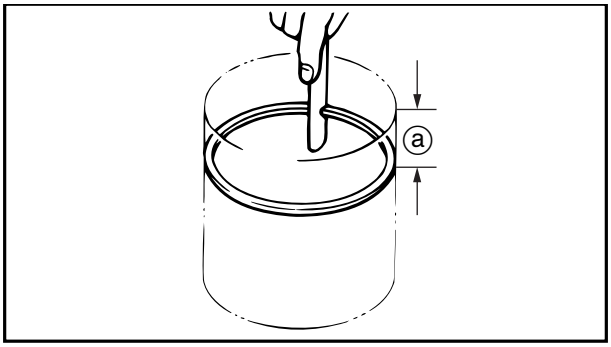


EAS00263
CHECKING THE PISTON RINGS

1. Measure:
 - piston ring side clearance
 Out of specification → Replace the piston and piston rings as a set.

NOTE:
Before measuring the piston ring side clearance, eliminate any carbon deposits from the piston ring grooves and piston rings.

Piston ring side clearance
Top ring
0.02 ~ 0.08 mm(0.0008~0.0031 in)
<Limit>: 0.13mm(0.0051 in)
2nd ring
0.02 ~ 0.06 mm(0.0008~0.0024 in)
<Limit>:0.12 mm(0.0047 in)



2. Install:
 - piston ring
 (into the cylinder)

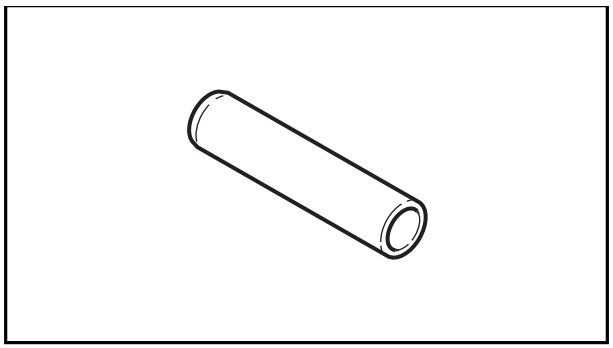
NOTE:
Level the piston ring into the cylinder with the piston crown.

ⓐ 10 mm (0.394 in)

3. Measure:
 - piston ring end gap
 Out of specification → Replace the piston ring.

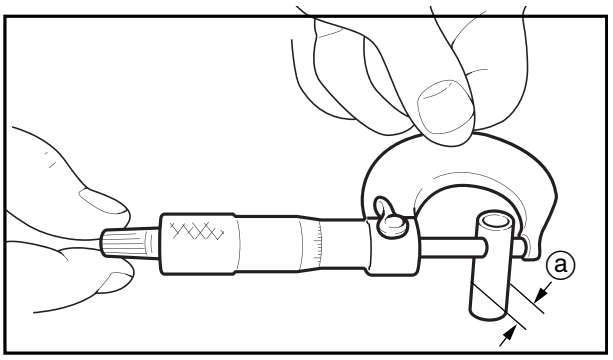
NOTE:
The oil ring expander spacer's end gap cannot be measured. If the oil ring rail's gap is excessive, replace all three piston rings.

Piston ring end gap
Top ring
0.05 ~ 0.15 mm (0.0020 ~ 0.0059 in)
<Limit>: 0.40 mm (0.0157 in)
2nd ring
0.05 ~ 0.17 mm (0.0020 ~ 0.0067 in)
<Limit>: 0.52 mm (0.0205 in)
Oil ring
0.20 ~ 0.70 mm (0.0079 ~ 0.0276 in)



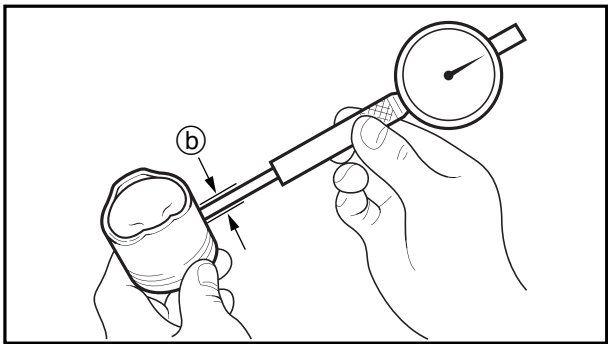
EAS00265
CHECKING THE PISTON PIN

1. Check:
 - piston pin
 Blue discoloration/grooves → Replace the piston pin and then check the lubrication system.



2. Measure:
 - piston pin outside diameter ⓐ
 Out of specification → Replace the piston pin.

Piston pin outside diameter
9.996 ~ 10.000 mm (0.3935 ~ 0.3937 in)
<Limit>:9.976 mm (0.3928 in)



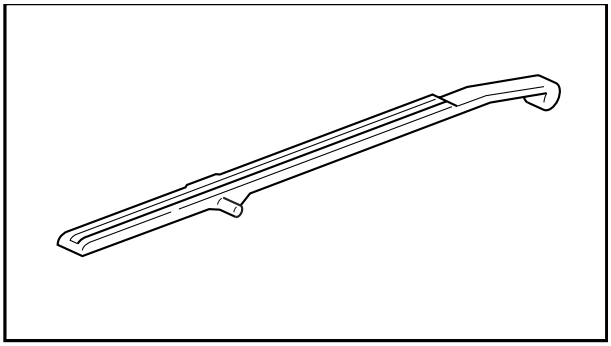
3. Measure:
 - piston pin bore diameter ⓑ
 Out of specification→ Replace the piston.

Piston pin bore diameter
10.002 ~ 10.013 mm (0.3938 ~ 0.3942 in)
<Limit>:10.043 mm (0.3954 in)

4. Calculate:
 - piston-pin-to-piston-pin-bore clearance
 Out of specification → Replace the piston pin and piston as a set.

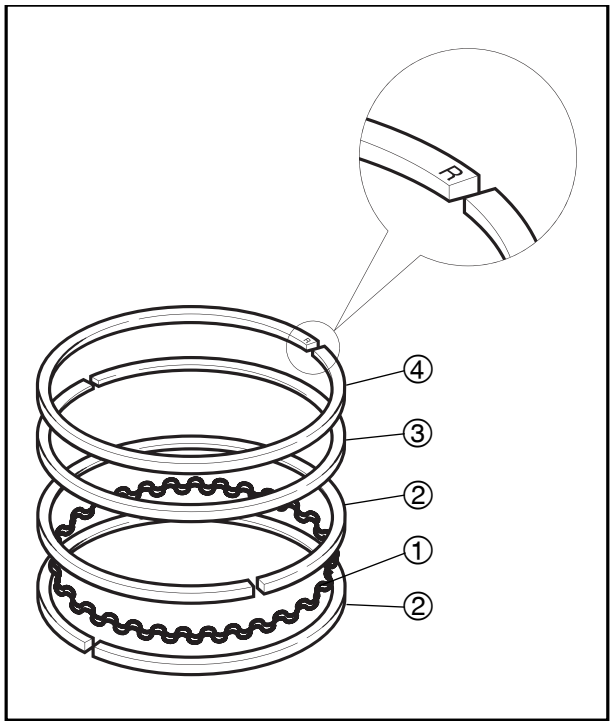
Piston-pin-to-piston-pin-bore clearance =
Piston pin bore diameter ⓑ -
Piston pin outside diameter ⓐ

Piston-pin-to-piston clearance
0.002 ~ 0.017 mm (0.0001 ~ 0.0007 in)



CHECKING THE TIMING CHAIN GUIDE

1. Check:
 - timing chain guide (exhaust side)
 Damage/wear → Replace



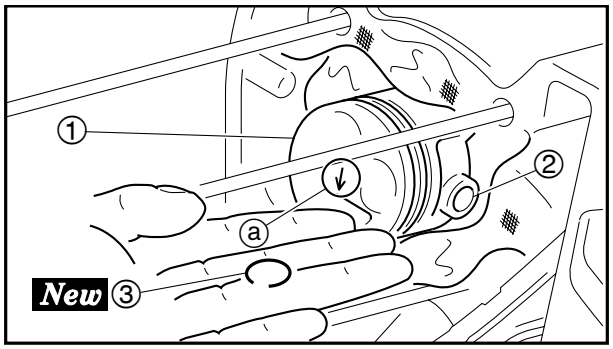
EAS00267

INSTALLING THE PISTON AND CYLINDER

1. Install:
 - oil ring expander ①
 - oil ring rail ②
 - 2nd ring ③
 - top ring ④

NOTE:

Be sure to install the piston rings so that the manufacturer's marks or numbers face up.



2. Install:
 - piston ①
 - piston pin ②
 - piston pin clip New ③

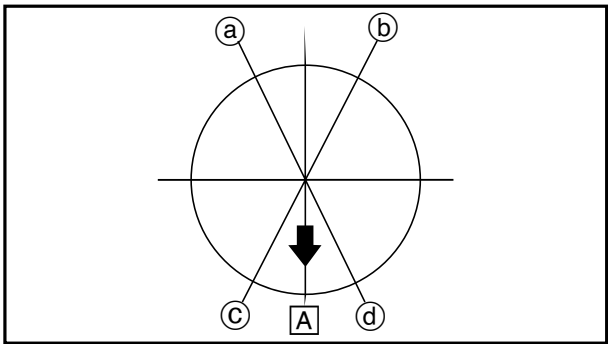
NOTE:

- Apply engineoil the piston pin.
- Make sure the arrow mark ⓐ on the piston points towards the exhaust side of the cylinder.
- Before installing the piston pin clip, cover the crankcase opening with a clean rag to prevent the clip from falling into the crankcase.

3. Install:
 - gasket **New**
 - dowel pins

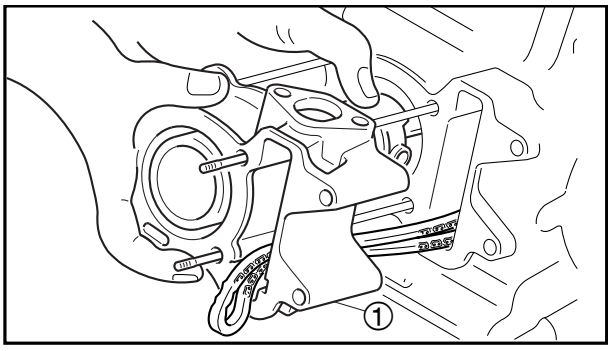
4. Lubricate:
 - piston
 - piston rings
 - cylinder
 (with the recommended lubricant)

	Recommended lubricant **Engine oil**



5. Offset:
 - piston ring end gaps

ⓐ Top ring
ⓑ Lower oil ring rail
ⓒ Upper oil ring rail
ⓓ 2nd ring
Ⓐ Exhaust side



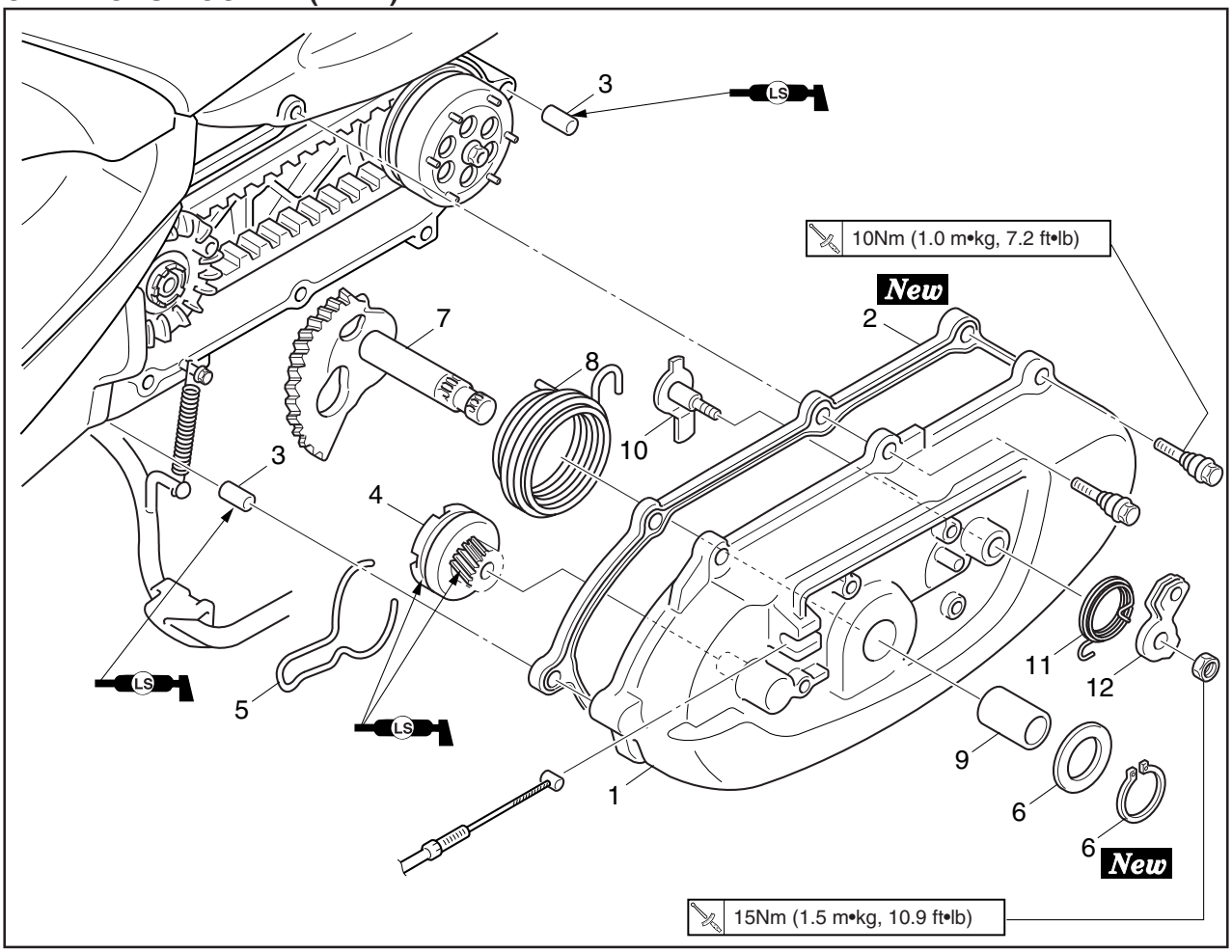
6. Install:
 - timing chain guide (exhaust side)
 - cylinder ①

NOTE:
- While compressing the piston rings with one hand, install the cylinder with the other hand.
- Pass the timing chain and timing chain guide (exhaust side) through the timing chain cavity.

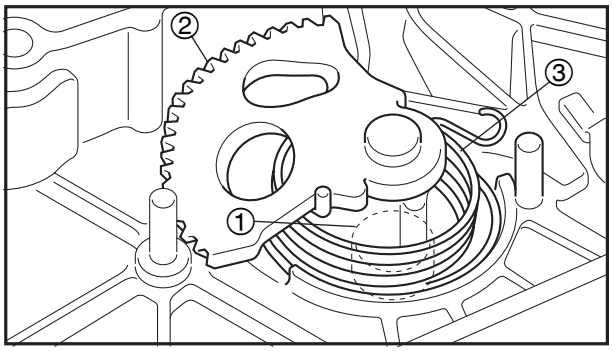
EAS00316

BELT DRIVE

CRANKCASE COVER (LEFT)

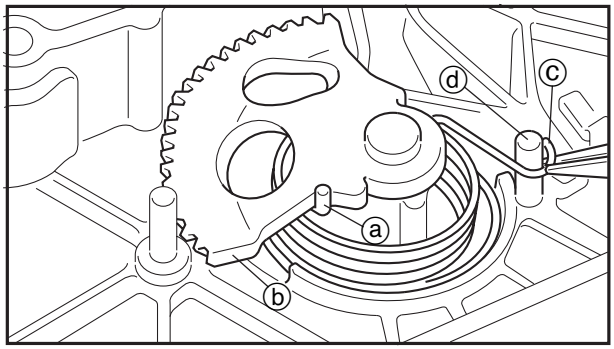


Order	Job/Part	Q'ty	Remarks
	Removing the crankcase cover (left)		Remove the parts in the order listed.
	Kickstarter		
	Rear wheel lock cable cover		Refer to " LEADS, HOSES AND REAR BRAKE ".
	Rear wheel lock cable		
1	Crankcase cover(left)	1	
2	Crankcase cover gasket(left)	1	
3	Dowel pin	2	
4	Kick pinion gear	1	
5	Kick pinion gear clip	1	Refer to " INSTALLING THE KICKSTARTER ".
6	Circlip/Plate washer	1/1	
7	Kick shaft assembly	1	
8	Torsion spring	1	
9	Solid bush	1	
10	Holder	1	
11	Torsion spring	1	
12	Stopper lever assembly	1	
			For installation, reverse the removal procedure.



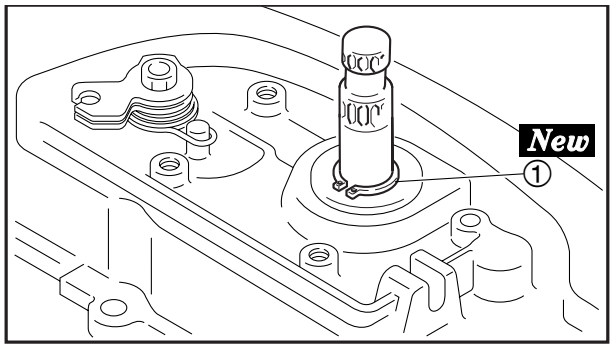
EAS00340
INSTALLING THE KICKSTARTER

1. Install:
 - solid bush①
 - kick shaft assembly②
 - torsion spring③

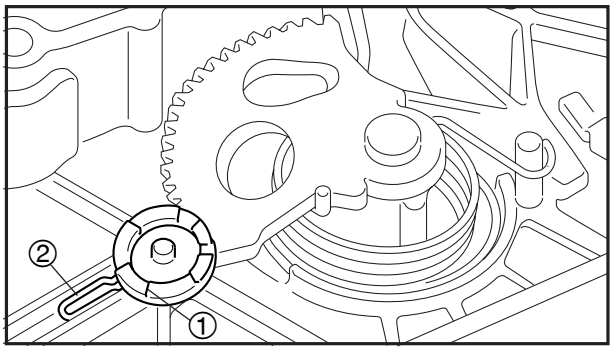


2. Hook:
 - kickstarter spring

NOTE:
Hook the spring end ⓐ on the kickstarter shaft ⓑ as shown, and hook the other end ⓒ on the projection ⓓ .



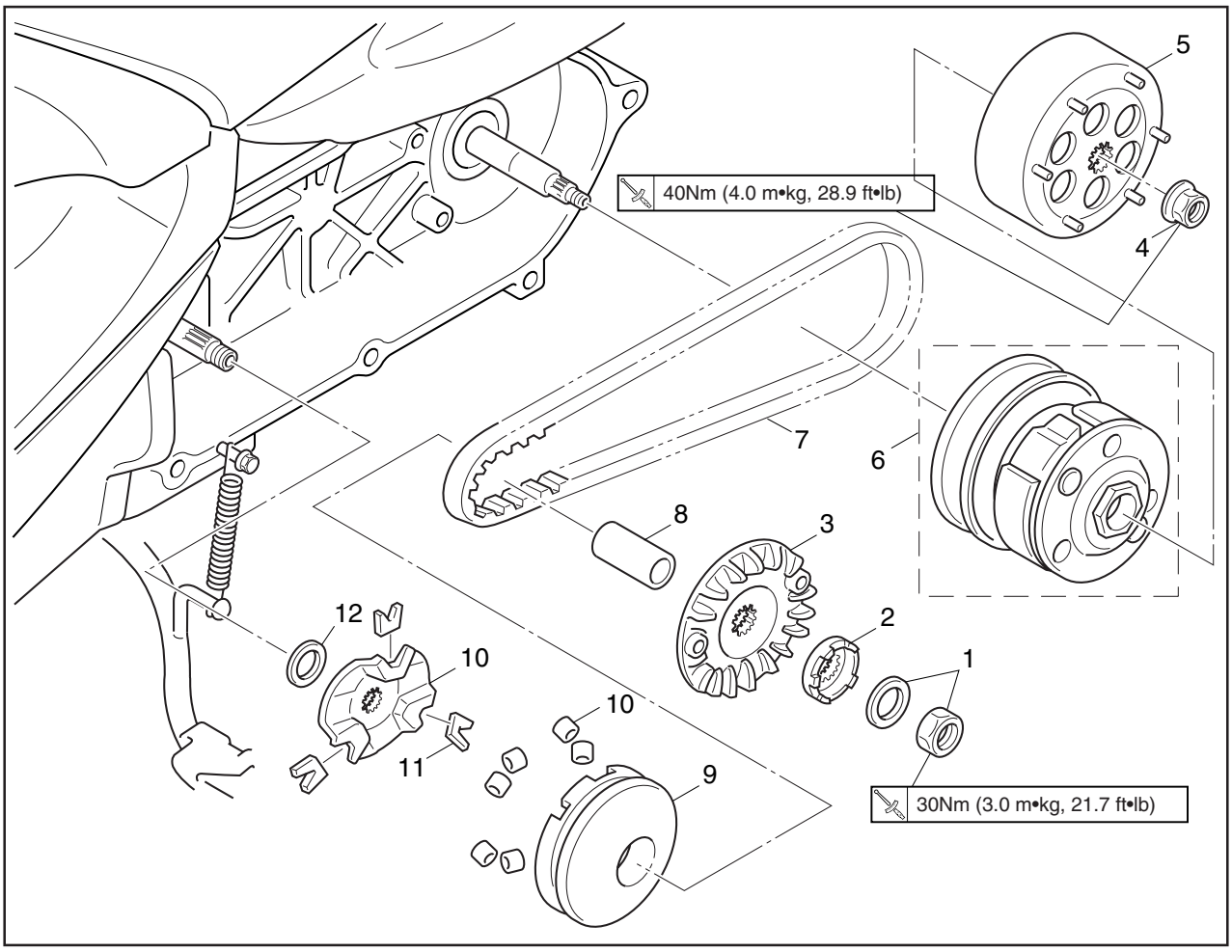
3. Install:
 - plain washer
 - circlip① **New**



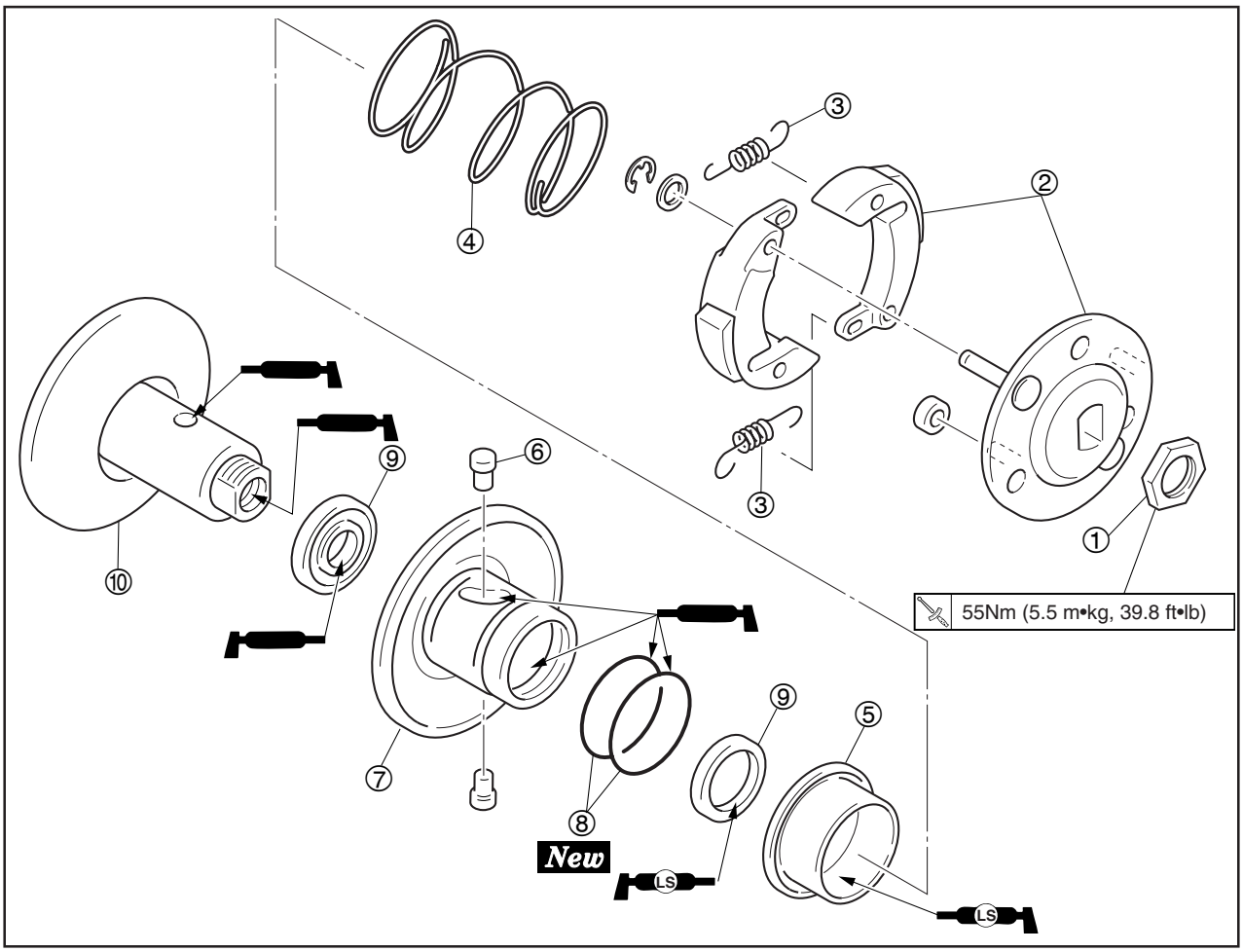
4. Install:
 - kick pinion gear①
 - kick pinion gear clip②

NOTE:
Install the clip at the position shown.

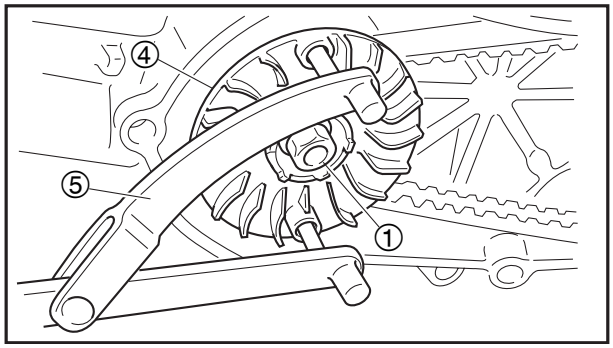
V-BELT, CLUTCH, PRIMARY AND SECONDARY SHEAVE

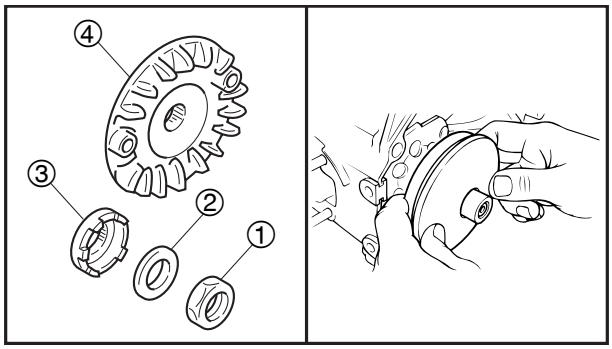


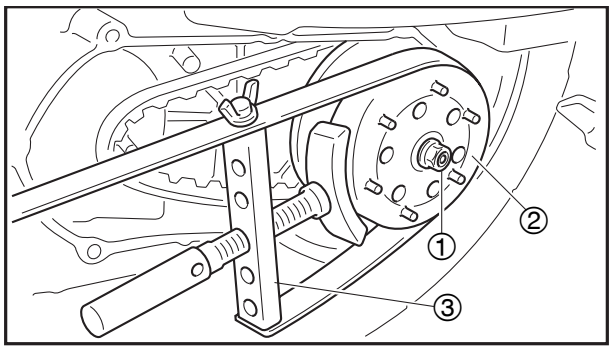
Order	Job/Part	Q'ty	Remarks
	Removing the V-belt, clutch, primary and secondary sheave		Remove the parts in the order listed.
1	Primary sheave nut/Plate washer	1/1	
2	Oneway clutch	1	Refer to " REMOVING AND INSTALLING THE SECONDARY SHEAVE "
3	Primary fixed sheave	1	
4	Secondary sheave nut	1	
5	Clutch housing	1	
6	Secondary sheave assembly	1	Refer to " REMOVING AND INSTALLING THE PRIMARY SHEAVE "
7	V-belt	1	
8	Collar	1	
9	Primary sliding sheave	1	
10	Cam/Weight	1/6	
11	Slider	3	
12	Plate washer	1	
			For installation, reverse the removal procedure.

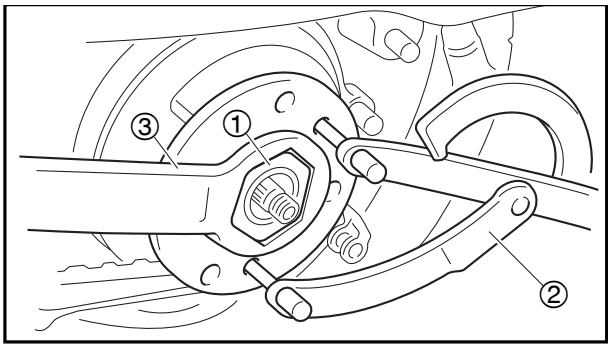


Order	Job/Part	Q'ty	Remarks
	Disassembling the secondary sheave assembly		Disassemble the parts in the order listed.
①	Clutch carrier nut	1	
②	Clutch carrier	1	
③	Clutch shoe spring	2	
④	Compression spring	1	
⑤	Secondary spring seat	1	Refer to " REMOVING AND INSTALLING THE SECONDARY SHEAVE " .
⑥	Guide pin	2	
⑦	Secondary sliding sheave	1	
⑧	O-ring	2	
⑨	Oil seal	2	
⑩	Secondary fixed sheave	1	
			For installation, reverse the removal procedure.









EAS00317

REMOVING THE PRIMARY SHEAVE

1. Remove:
 - primary sheave nut ①
 - plate washer②
 - oneway clutch③
 - primary fixed sheave ④

NOTE:

While holding the primary fixed sheave with the rotor holding tool ⑤, loosen the primary fixed sheave nut.

Rotor holding tool:
90890-01235 (YU-01235)

EAS00318

REMOVING THE SECONDARY SHEAVE AND V-BELT

1. Remove:
 - secondary sheave nut ①
 - clutch housing ②

NOTE:

While holding the clutch housing with the sheave holder ③, loosen the secondary sheave nut.

Sheave holder:
90890-01701 (YS-01880-A)

2. Loosen:
 - clutch carrier nut ①

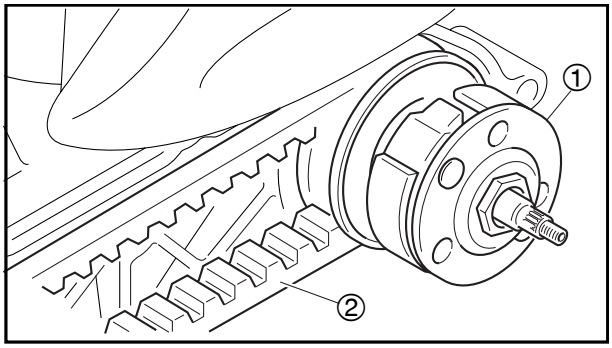
CAUTION:

Do not remove the clutch carrier nut at this stage.

NOTE:

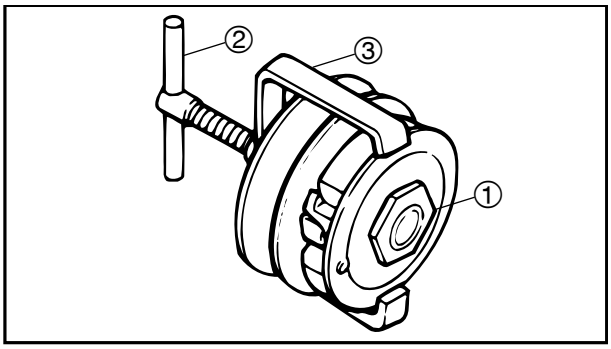
While holding the clutch carrier with the rotor holding tool ②, loosen the clutch carrier nut one full turn with the locknut wrench ③.

Roter holding tool:
90890-01235 (YU-01235)
Locknut wrench:
90890-01348 (YM-01348)



3. Remove:
 - secondary sheave assembly ①
 - V-belt ②

NOTE:
Remove the V-belt and clutch assembly from the primary sheave side.



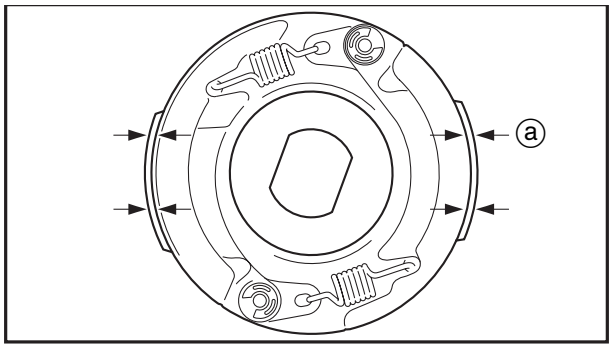
EAS00319
DISASSEMBLING THE SECONDARY SHEAVE

1. Remove:
 - clutch carrier nut ①

NOTE:
Install the clutch spring holder ② and clutch spring holder arm ③ onto the secondary sheave as shown. Then, compress the spring, and remove the clutch carrier nut ①.



Clutch spring holder
90890-01337 (YM-33285)
(YM-33285-6)



CHECKING THE CLUTCH SHOE

1. Measure:
 - clutch shoe
 Scratches → Glaze using coares sandpaper.
 Damage/wear → Replace

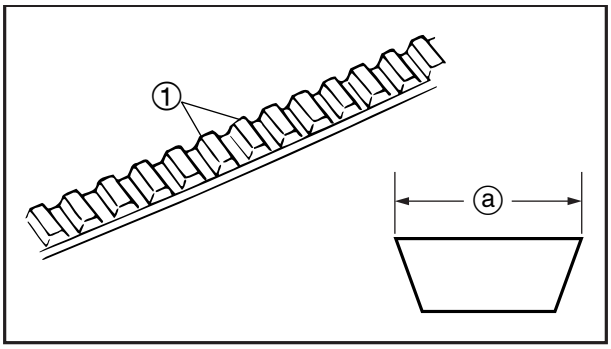


Clutch shoe thickness
3.7 mm (0.146 in)
<Limit>: 2.0 mm (0.079 in)

NOTE:
Inspect clutch shoes ⓐ.
After removing the clutch weight spring, do not use them again.
Replace the all two as a set.

EAS00320
CHECKING THE V-BELT

1. Check:
 - V-belt ①
 Cracks/damage/wear → Replace.
 Grease/oil → Clean the primary and secondary sheave.

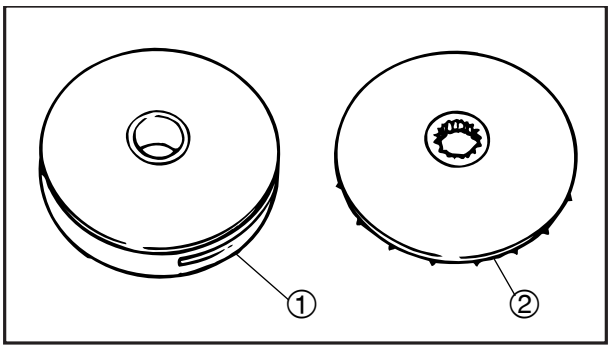


2. Measure:
 - V-belt width ⓐ
 Out of specification → Replace.

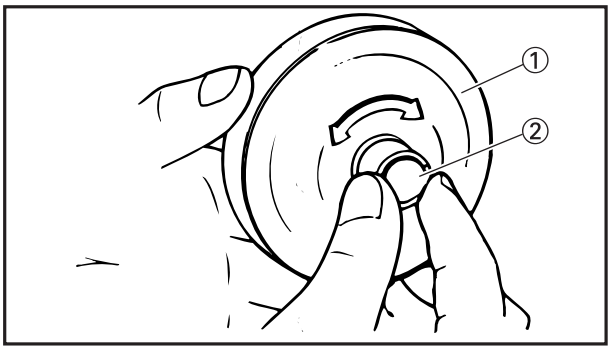
V-belt width
16.8 mm (0.0661 in)
<Limit>: 15.8 mm (0.622 in)

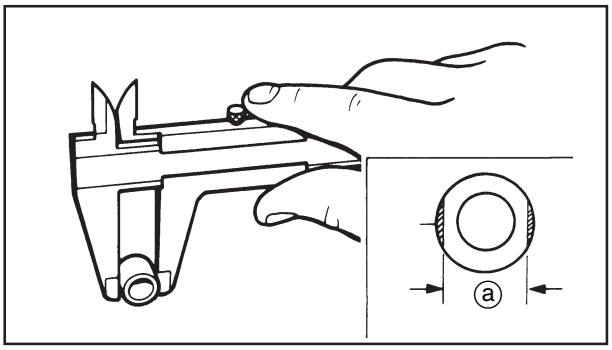
CHECKING THE PRIMARY SHEAVE

1. Check:
 - primary sliding sheave①
 - primary fixed sheave②
 Cracks/damage/wear → Replace the primary sliding sheave, primary fixed sheave and V-belt.



2. Check:
 - free movement
 Insert the collar② into the primary sliding sheave①, and check for free movement. Stick or excessive play → Replace the primary sliding sheave or collar.





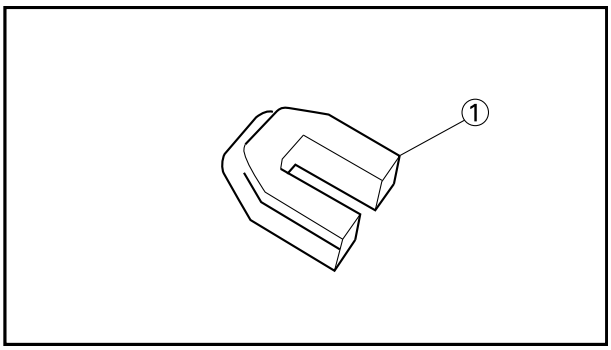
EAS00321
CHECKING THE PRIMARY SHEAVE WEIGHTS

The following procedure applies to all of the primary sheave weights.

1. Check:
 - primary sheave weight
 Cracks/damage/wear → Replace.

2. Measure:
 - primary sheave weight outside diameter ⓐ
 Out of specification → Replace.

Primary sheave weight outside diameter
15 mm (0.591 in)
<Limit>: 14.5 mm (0.571 in)

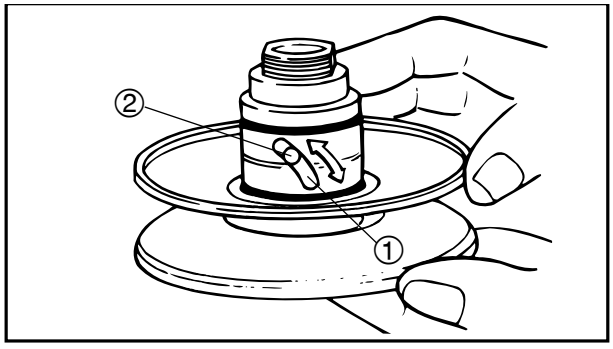


CHECKING THE SLIDER

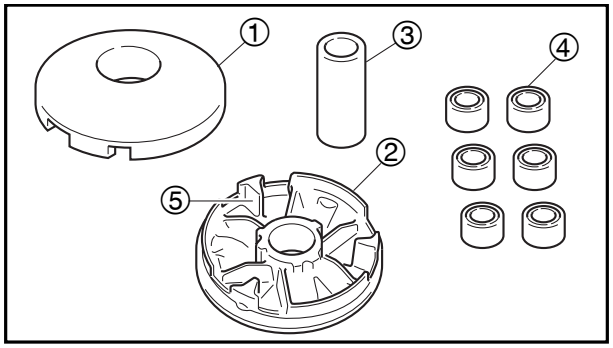
1. Check:
 - slider ①
 Damage/wear→ Replace

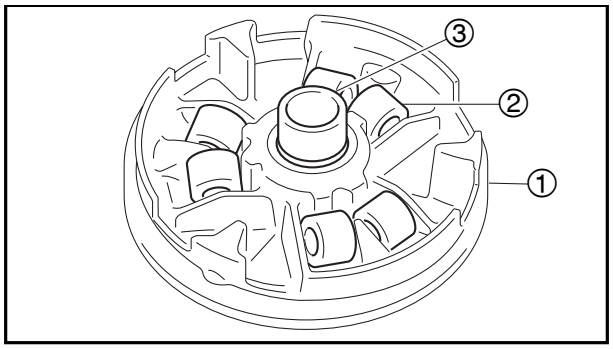
EAS00322
CHECKING THE SECONDARY SHEAVE

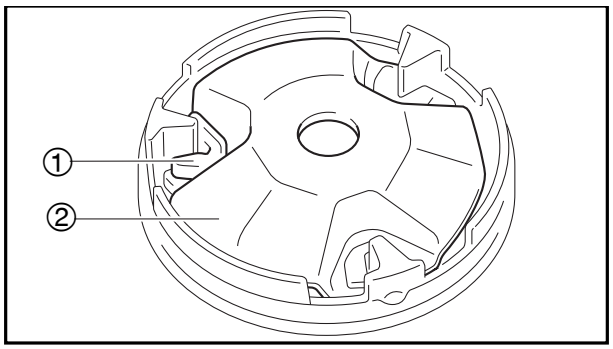
1. Check:
 - secondary fixed sheave
 - secondary sliding sheave
 Cracks/damage/wear → Replace the secondary fixed and sliding sheaves as a set.



2. Check:
 - torque cam groove ①
 Damage/wear → Replace the secondary fixed and sliding sheaves as a set.
3. Check:
 - guide pin ②
 Damage/wear → Replace the secondary fixed and sliding sheaves as a set.







EAS00323

ASSEMBLING THE PRIMARY SHEAVE

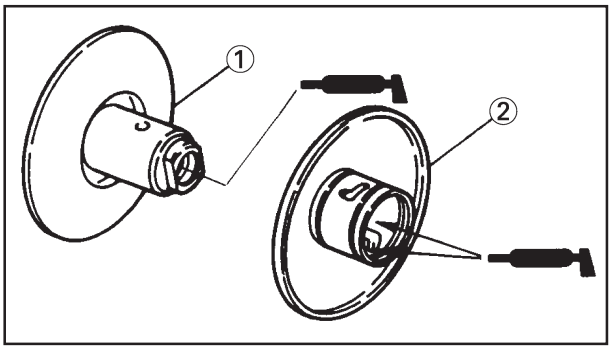
1. Clean:
 - primary fixed sheave ①
 - primary sliding sheave ②
 - collar ③
 - primary sheave weights ④

NOTE:

Use thinner to clean up grease, dirt on the primary sliding sheave cam side ⑤.

2. Install:
 - primary sliding sheave ①
 - primary sheave weights ②
 - collar ③

3. Install:
 - slider ①
 - cam ②

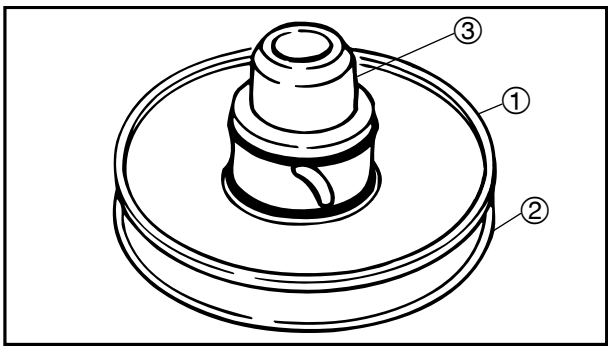


EAS00324
ASSEMBLING THE SECONDARY SHEAVE

1. Lubricate:
 - secondary fixed sheave's inner surface ①
 - secondary sliding sheave's inner surface ②
 - oil seals
 - bearings

 (with the recommended lubricant)

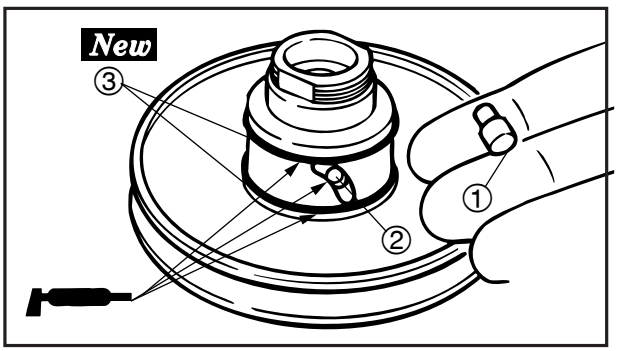
	Recommended lubricant **BEL-RAY assembly lube®**



2. Install:
 - secondary sliding sheave ①

NOTE:
Install the secondary sliding sheave onto the secondary fixed sheave ② with the oil seal guide ③.

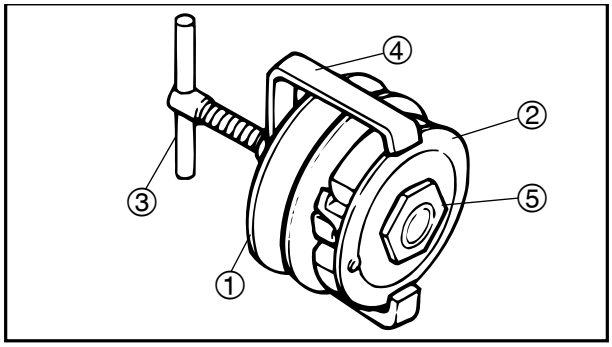
	Oil seal guide **90890-01384 (YM-33299)**



3. Install:
 - guide pin ①
4. Lubricate:
 - guide pin groove ②
 - o-ring New ③

 (with the recommended lubricant)

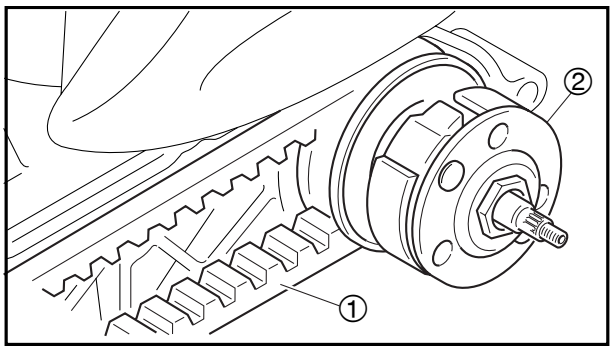
	Recommended lubricant **BEL-RAY assembly lube®**

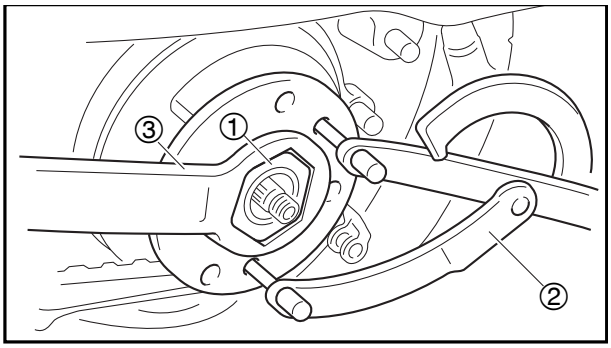


5. Install:
 - secondary sheave ①
 - spring
 - clutch carrier ②

NOTE:
Attach the clutch spring holder ③ and clutch spring holder arm ④ onto the secondary sheave as shown. Then, compress the spring, and tighten the clutch carrier nut ⑤.

Clutch spring holder
90890-01337 (YM-33285)
(YM-33285-6)





EAS00325
INSTALLING THE BELT DRIVE

1. Install:
 - V-belt ①
 - clutch assembly ②

CAUTION:
Do not allow grease to contact the V-belt, secondary sheave assembly.

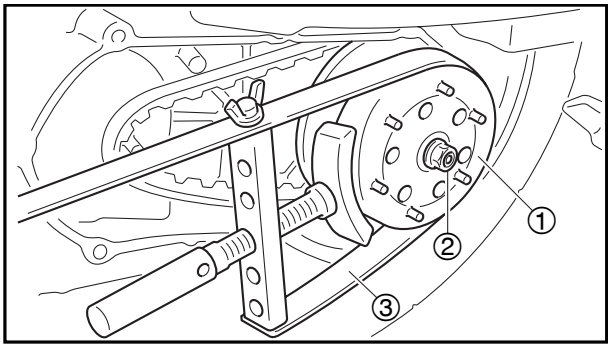
NOTE:
Install the V-belt onto the primary sheave side.

2. Install:
 - clutch carrier nut ①

55 Nm (5.5 m • kg, 39.8 ft • lb)

NOTE:
While holding the clutch carrier with the rotor holding tool ②, tighten the clutch carrier nut with the locknut wrench ③.

Rotor holding tool
90890-01235
Locknut wrench
90890-01348 (YM-01348)

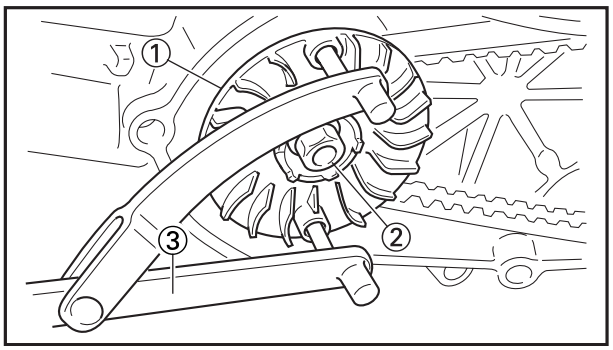


3. Install:
 - clutch housing ①
 - secondary sheave nut②

	40 Nm (4.0 m • kg, 28.9 ft • lb)

NOTE:
Tighten the secondary sheave nut with the sheave holder ③.

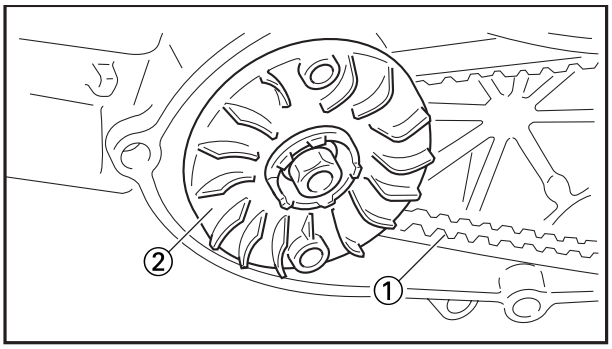
	Sheave holder **90890-01701 (YS-01880-A)**



4. Install:
 - primary fixed sheave ①
 - primary sheave nut ②

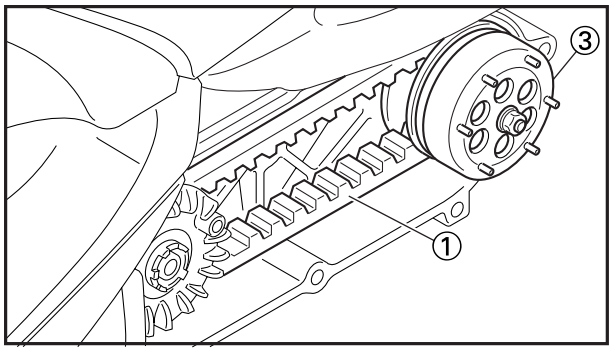
	30 Nm (3.0 m• kg, 21.7 ft• lb)

NOTE:
While holding the primary fixed sheave with the rotor holding tool ③, tighten the primary fixed sheave nut.



5. Position:
 - V-belt ①

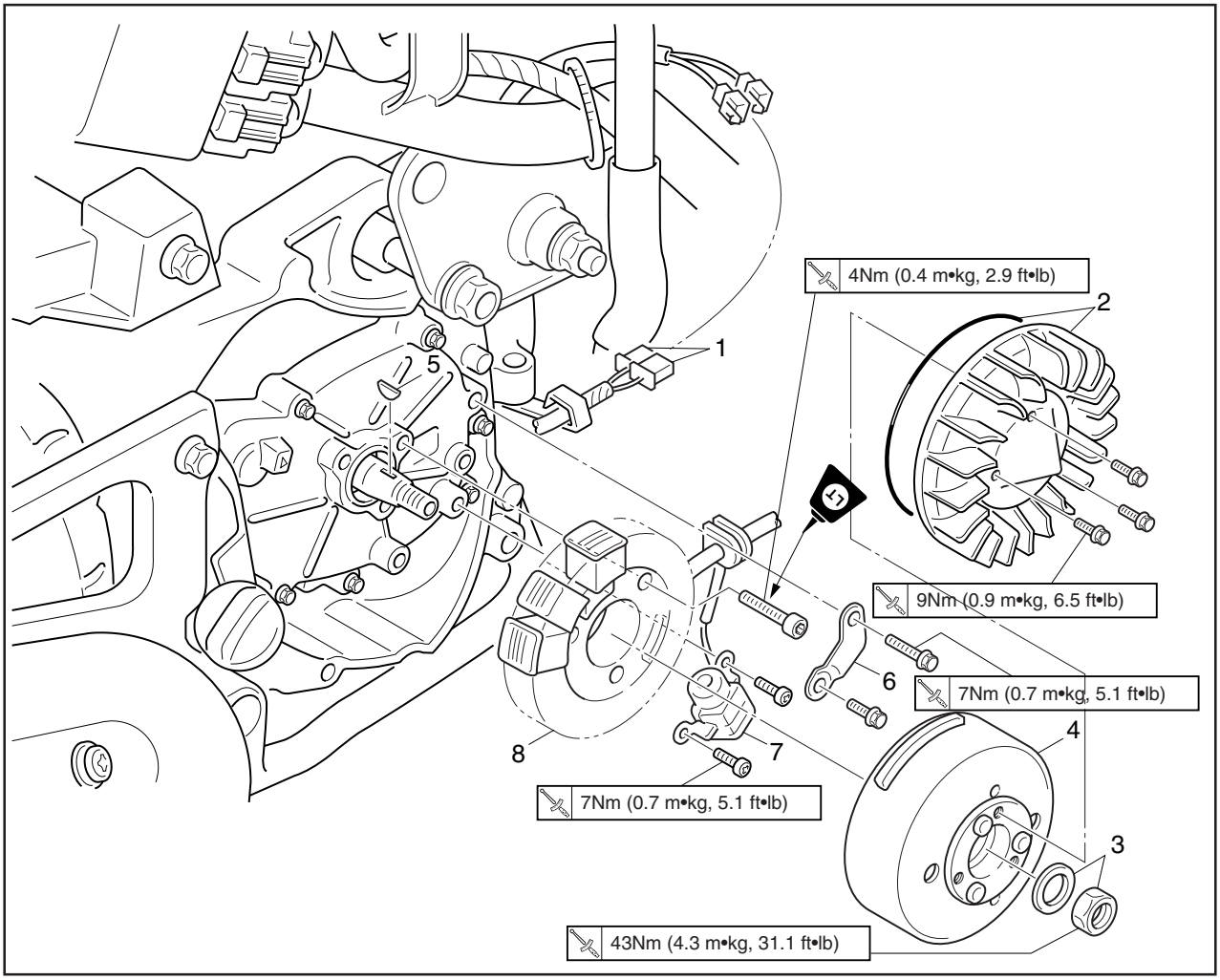
NOTE:
Position the V-belt in the primary sheave ② (when the pulley is at its widest position) and in the secondary sheave ③ (when the pulley is at its narrowest position), and make sure the V-belt is tight.



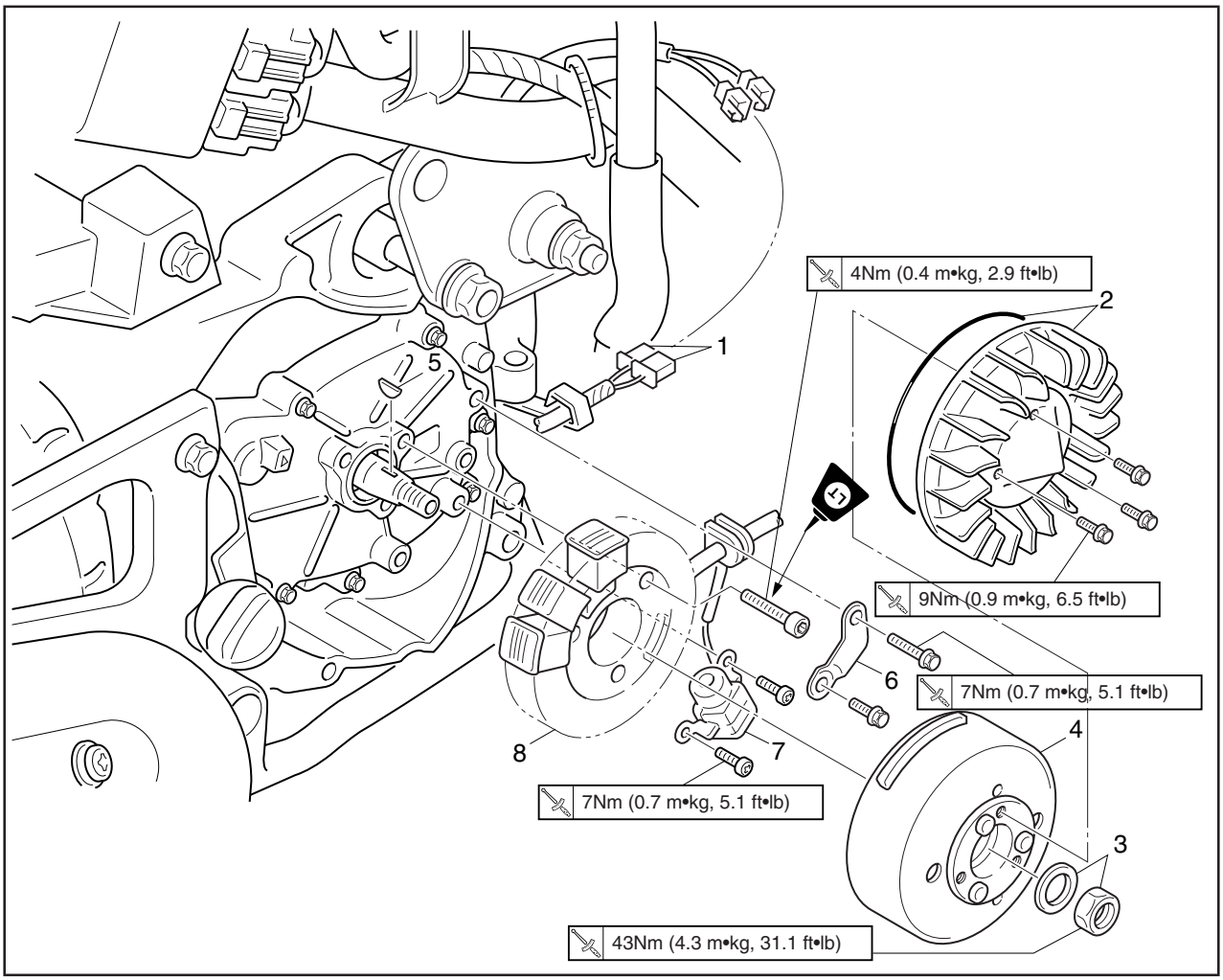
EAS00341

STARTER CLUTCH AND AC MAGNETO

STATOR COIL ASSEMBLY

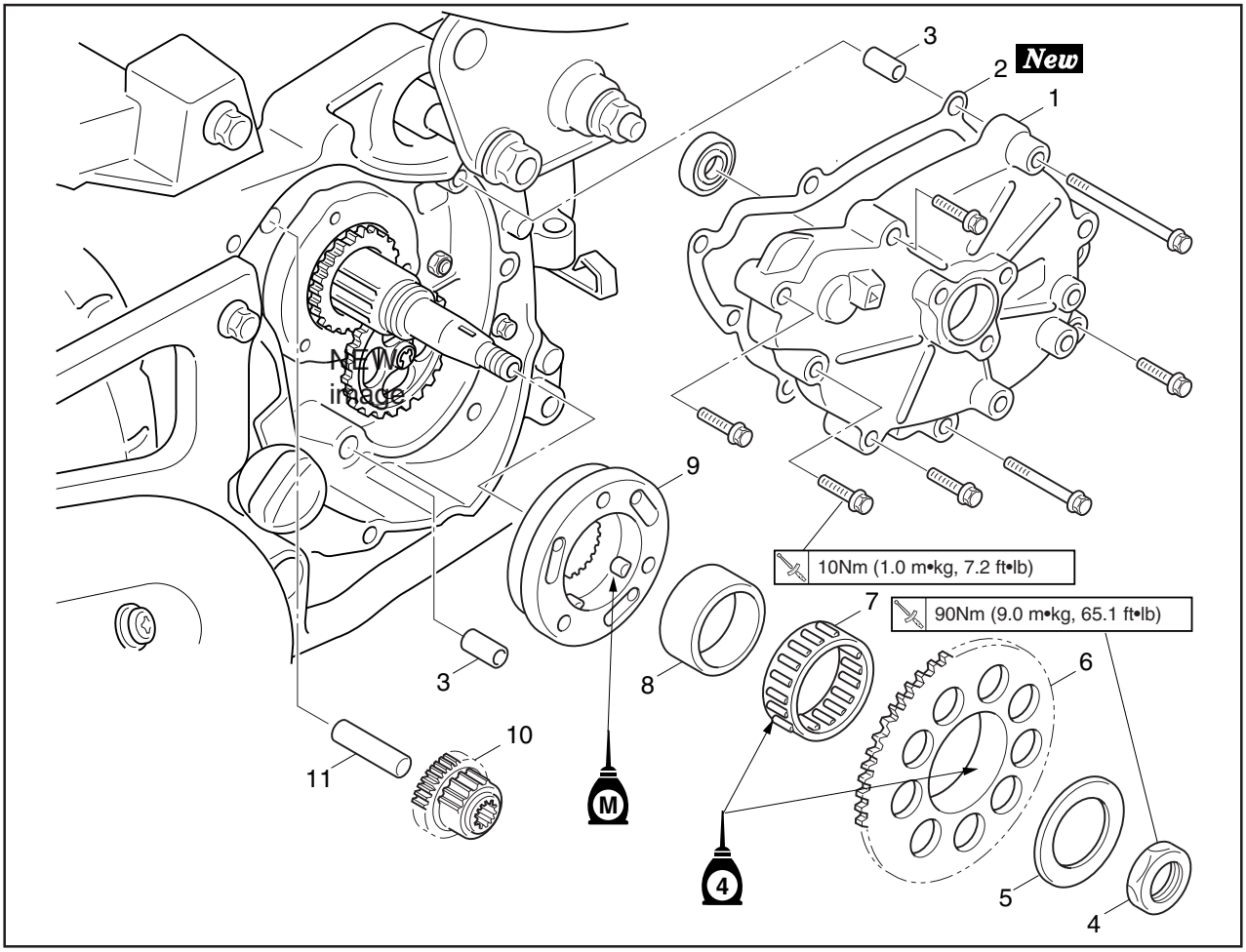


Order	Job/Part	Q'ty	Remarks
	Removing the stator coil assembly		Remove the parts in the order listed.
	Coolant		Drain. Refer to "CHANGING THE COOLANT" in chapter 3.
	Radiator		Refer to "RADIATOR" in chapter 6.
	Seat/Trunk/Mat		Refer to "COVER AND PANEL" in chapter 3.
	Rear carrier/Front cover		
	Side cover(left and right)		
	Rear cover/Battery cover		
	Battery holder/Battery		
	Footrest board side cover mole(left and right)		
	Footrest board		
1	AC magneto lead	1	Disconnect.
2	Fan/O-ring	1/1	
3	Nut/Plate washer	1/1	
4	AC magneto rotor	1	
5	Woodruff key	1	

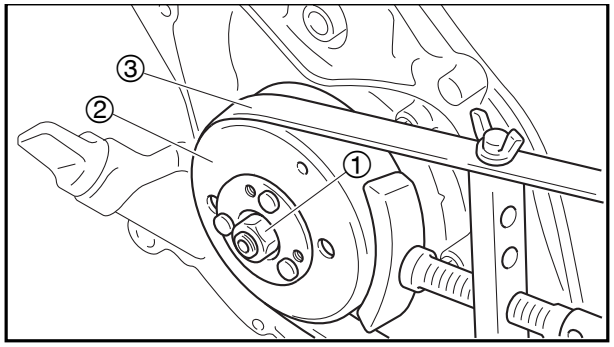


Order	Job/Part	Q'ty	Remarks
6	Lock plate	1	
7	Pick up coil	1	
8	Stator coil assembly	1	
			For installation, reverse the removal procedure.

EAS00342
STARTER CLUTCH



Order	Job/Part	Q'ty	Remarks
	Removing the starter clutch		Remove the parts in the order listed.
	Engine oil		Drain. Refer to "CHANGING THE ENGINE OIL"in chapter 3.
	AC magneto rotor		Refer to " REMOVING AND INSTALLING THE AC MAGNETO ".
	Stator coil assembly		
1	Crankcase cover(right)	1	
2	Gasket	1	
3	Dowel pin	2	**CAUTION:**
4	Starter clutch nut	1	**The starter clutch nut is left-hand thread.**
5	Washer	1	
6	Starter wheel gear	1	
7	Roller	1	
8	Collar	1	
9	Starter clutch	1	Refer to " REMOVING AND INSTALLING THE STARTER CLUTCH ".
10	Idle gear	1	
11	Shaft	1	
			For installation, reverse the removal procedure.



EAS00347

REMOVING THE AC MAGNETO

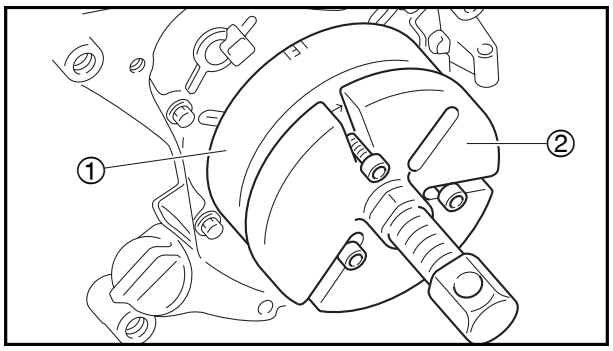
1. Remove:
 - AC magneto rotor nut①
 - washer

NOTE:

- While holding the AC magneto rotor ② with the sheave holder ③, loosen the AC magneto rotor nut.
- Do not allow the sheave holder to touch the projection on the AC magneto rotor.



Sheave holder
90890-01701
YS-01880-A



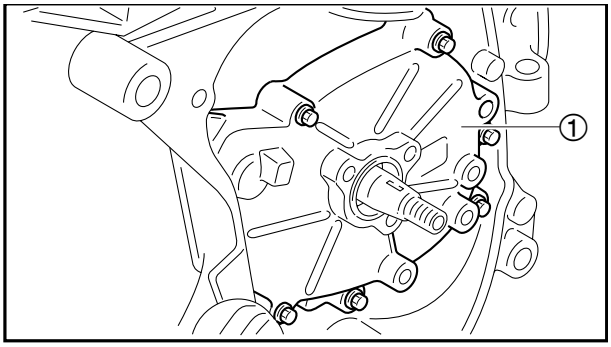
2. Remove:
 - AC magneto rotor ①
 (with the flywheel puller ②)
 - woodruff key

CAUTION:

To protect the end of the crankshaft, place an appropriate sized socket between the flywheel puller set's center bolt and the crankshaft.

NOTE:

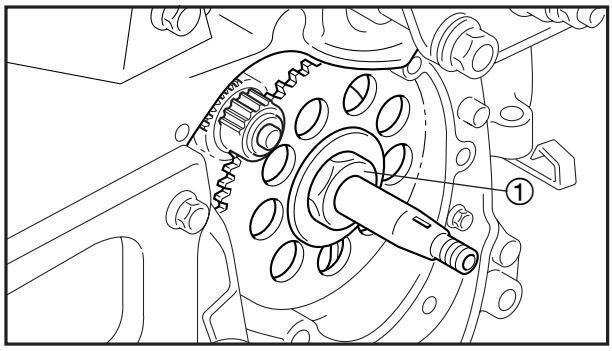
Make sure the flywheel puller is centered over the AC magneto rotor.



EAS00344
REMOVING THE STARTER CLUTCH

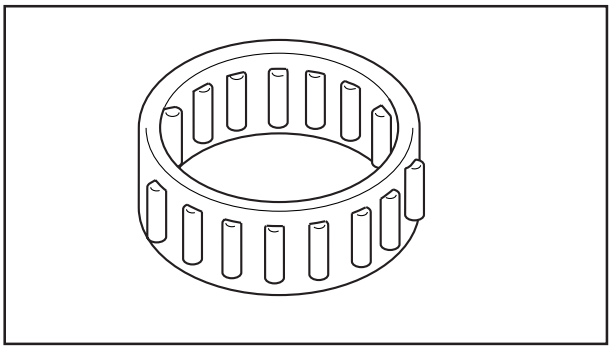
1. Remove:
 - crankcase cover (right)①

NOTE:
Loosen each bolt 1/4 of a turn at a time, in stages and in a crisscross pattern. After all of the bolts are fully loosened, remove them.



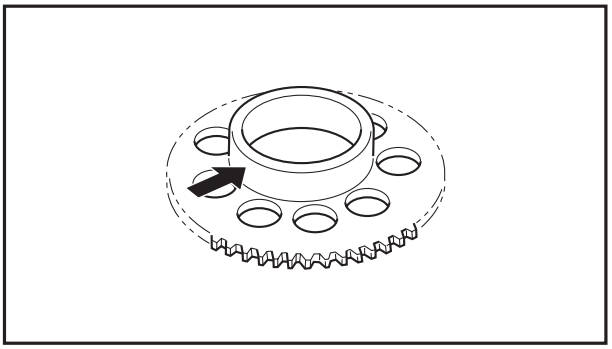
2. Remove:
 - starter clutch nut①
 - washer
 - starter wheel gear
 - roller
 - collar
 - starter clutch
 - idle gear

NOTE:
The starter clutch nut is left-hand thread.

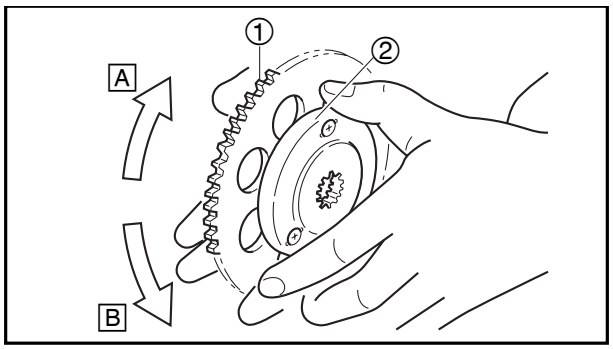


EAS00351
CHECKING THE STARTER CLUTCH

1. Check:
 - ●starter clutch roller ①
 Damage/wear → Replace.
2. Check:
 - ●starter clutch idle gear
 - ●starter wheel gear
 Burrs/chips/roughness/wear → Replace the defective part(s).

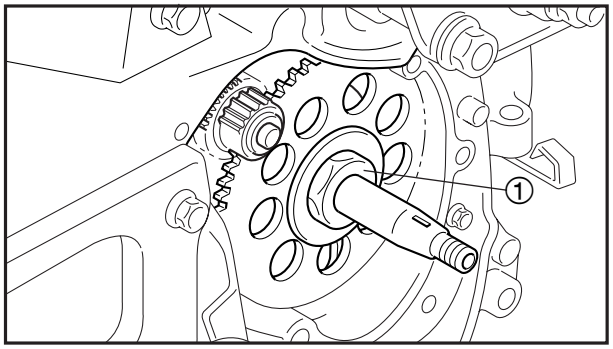


3. Check:
 - ●starter wheel gear's contacting surfaces
 Damage/pitting/wear → Replace the starter clutch gear.



4. Check:
 - ●starter clutch operation

a. Install the starter wheel gear ①onto the starter clutch ② and hold the starter clutch.
b. When turning the starter wheel gear clockwise [A], the starter clutch and the starter wheel gear should engage, otherwise the starter clutch is faulty and must be replaced.
c. When turning the starter wheel gear counterclockwise [B], it should turn freely, otherwise the starter clutch is faulty and must be replaced.

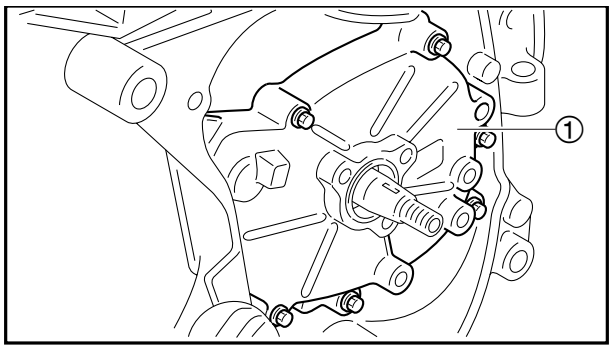


EAS00355
INSTALLING THE STARTER CLUTCH

1. Install:
 - idle gear
 - starter clutch
 - collar
 - roller
 - starter wheel gear
 - washer
 - starter clutch nut①

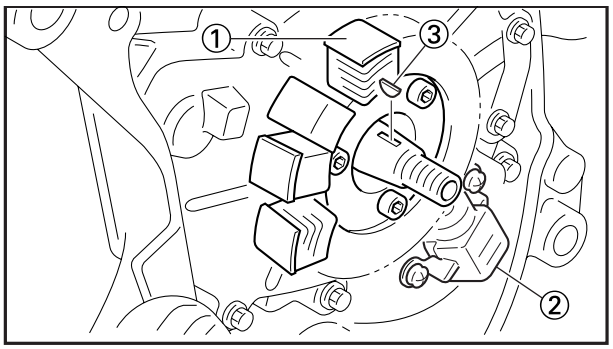
	90 Nm (9.0 m • kg, 65.1 ft • lb)

NOTE:
The starter clutch nut is left-hand thread.



2. Install:
 - gasket **New**
 - crankcase cover (right)①

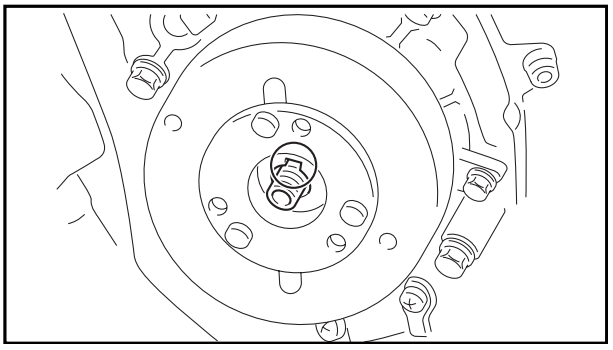
	10 Nm (1.0 m • kg, 7.2 ft • lb)

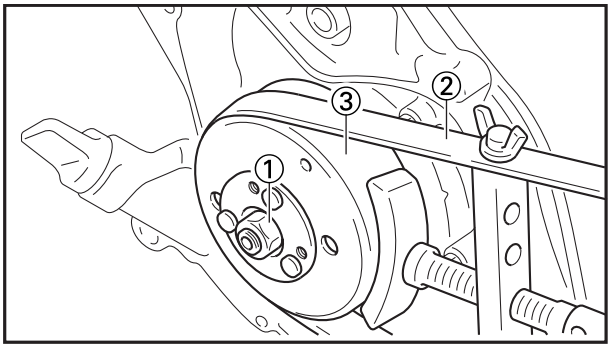


EAS00354
INSTALLING THE AC MAGNETO

1. Install:
 - stator coil assembly①
 - pick up coil②
 - woodruff key③
 - AC magneto rotor
 - washer
 - AC magneto rotor nut

NOTE:
- Clean the tapered portion of the crankshaft and the AC magneto rotor hub.
- When installing the AC magneto rotor, make sure the woodruff key is properly seated in the keyway of the crankshaft.





2. Tighten:
 - AC magneto rotor nut ①

	43 Nm (4.3 m • kg, 31.1 ft • lb)

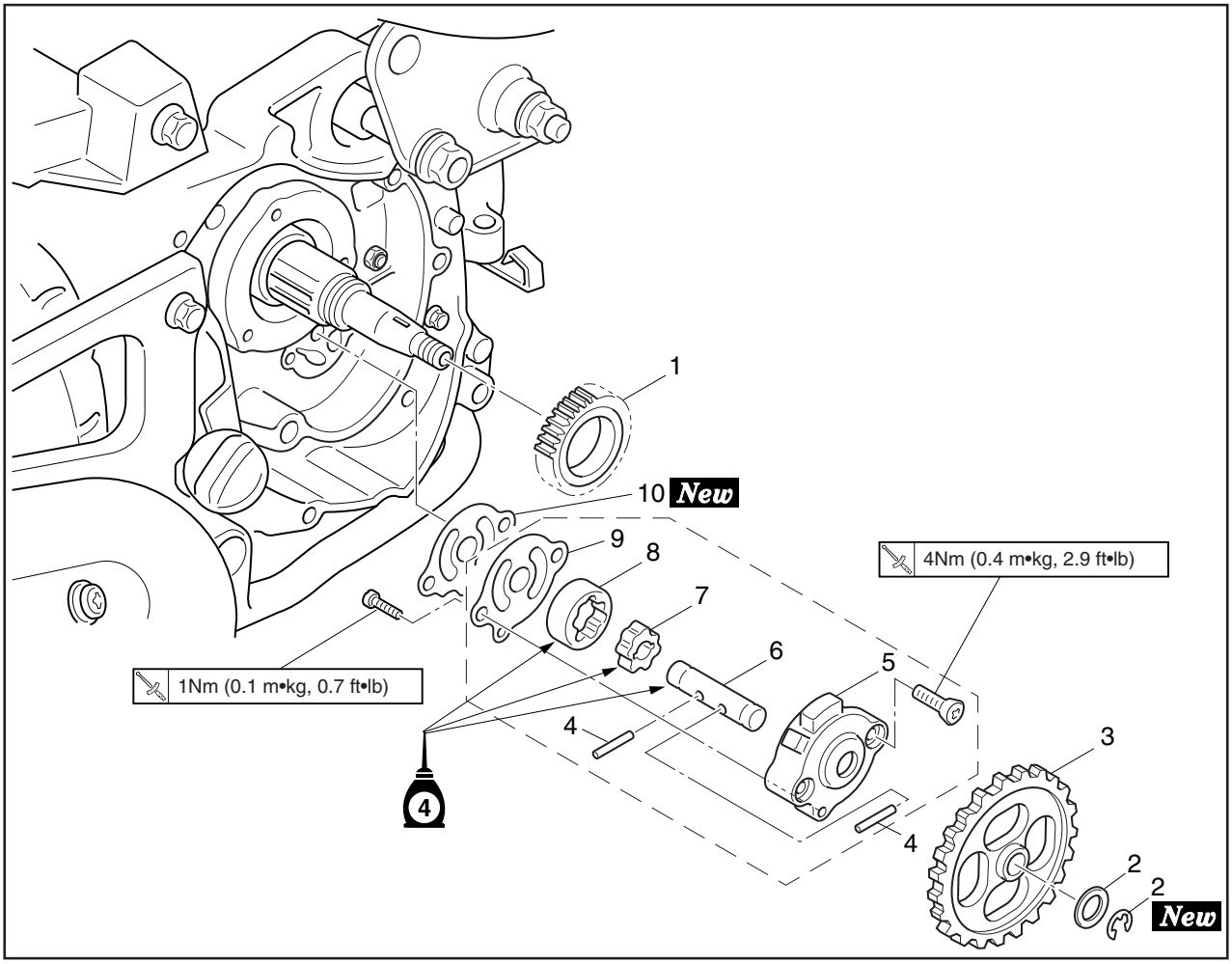
NOTE:

- While holding the AC magneto rotor ③with the sheave holder ②, tighten the AC magneto rotor nut.
- Do not allow the sheave holder to touch the projection on the AC magneto rotor.

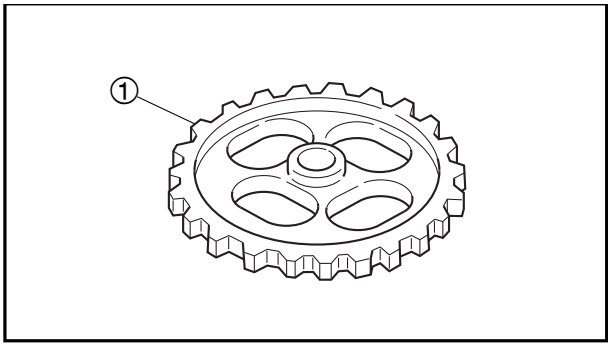


Sheave holder
90890-01701
YS-01880-A

EAS00360
OIL PUMP



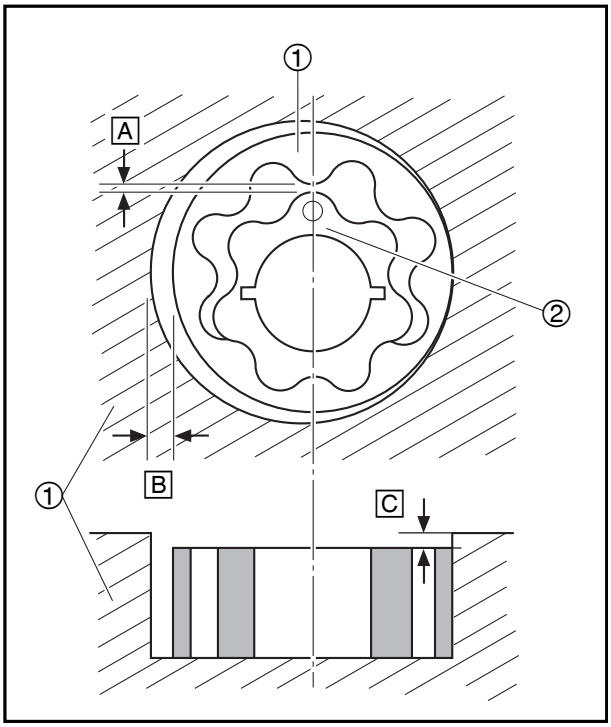
Order	Job/Part	Q'ty	Remarks
	Disassembling the oil pump		Remove the parts in the order listed.
	Radiator		Refer to "RADIATOR"in chapter 6.
	AC magneto		Refer to " STARTER CLUTCH AND AC
	Starter clutch		MAGNETO " .
1	Drive gear	1	
2	Circlip/Plate washer	1/1	
3	Oil pump driven gear	1	
4	Dowel pin	2	
5	Oil pump housing	1	
6	Oil pump shaft	1	
7	Inner rotor	1	
8	Outer rotor	1	
9	Oil pump housing cover	1	
10	Gasket	1	
			For assembly, reverse the disassembly procedure.



EAS00364
CHECKING THE OIL PUMP

1. Check:
 - oil pump drive gear
 - oil pump driven gear ①
 - oil pump housing
 - oil pump housing cover

 Cracks/damage/wear → Replace the defective part(s).



2. Measure:
 - inner-rotor-to-outer-rotor-tip clearance A
 - outer-rotor-to-oil-pump-housing clearance B
 - oil-pump-housing-to-inner-rotor-and-outer-rotor clearance C

 Out of specification → Replace the oil pump.

① Inner rotor
② Outer rotor
③ Oil pump housing

Inner-rotor-to-outer-rotor-tip clearance
0.15 mm (0.006 in) or less
<Limit>: 0.23 mm (0.009 in)
Outer-rotor-to-oil-pump-housing clearance
0.13 ~ 0.18 mm (0.005 ~ 0.007 in)
<Limit>: 0.25mm (0.010 in)
Oil-pump-housing-to-inner-rotor-and-outer-rotor clearance
0.07 ~ 0.12 mm (0.003 ~ 0.005 in)
<Limit>: 0.19 mm (0.008 in)

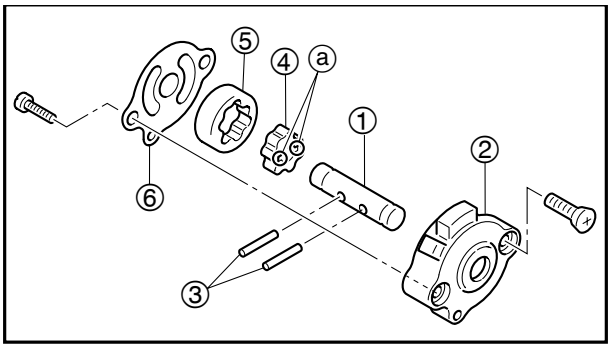
3. Check:
 - oil pump operation

 Rough movement → Repeat steps (1) and (2) or replace the defective part(s).

EAS00375
ASSEMBLING THE OIL PUMP

1. Lubricate:
 - inner rotor
 - outer rotor
 - oil pump shaft
 (with the recommended lubricant)

	Recommended lubricant Engine oil

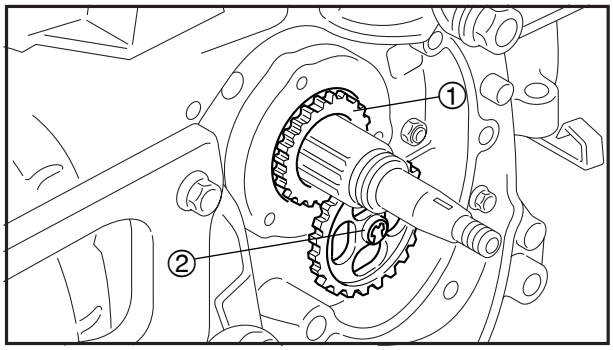


2. Install:
 - oil pump shaft ①
 (to the oil pump housing②)
 - pin ③
 - inner rotor ④
 - outer rotor⑤
 - oil pump housing cover⑥
 - oil pump housing screw

	1 Nm (0.1 m • kg, 0.7 ft • lb)

NOTE:
When installing the inner rotor, align the pin ③ in the oil pump shaft with the groove ⓐ in the inner rotor ④.

3. Check:
 - oil pump operation
 Refer to “CHECKING THE OIL PUMP”.



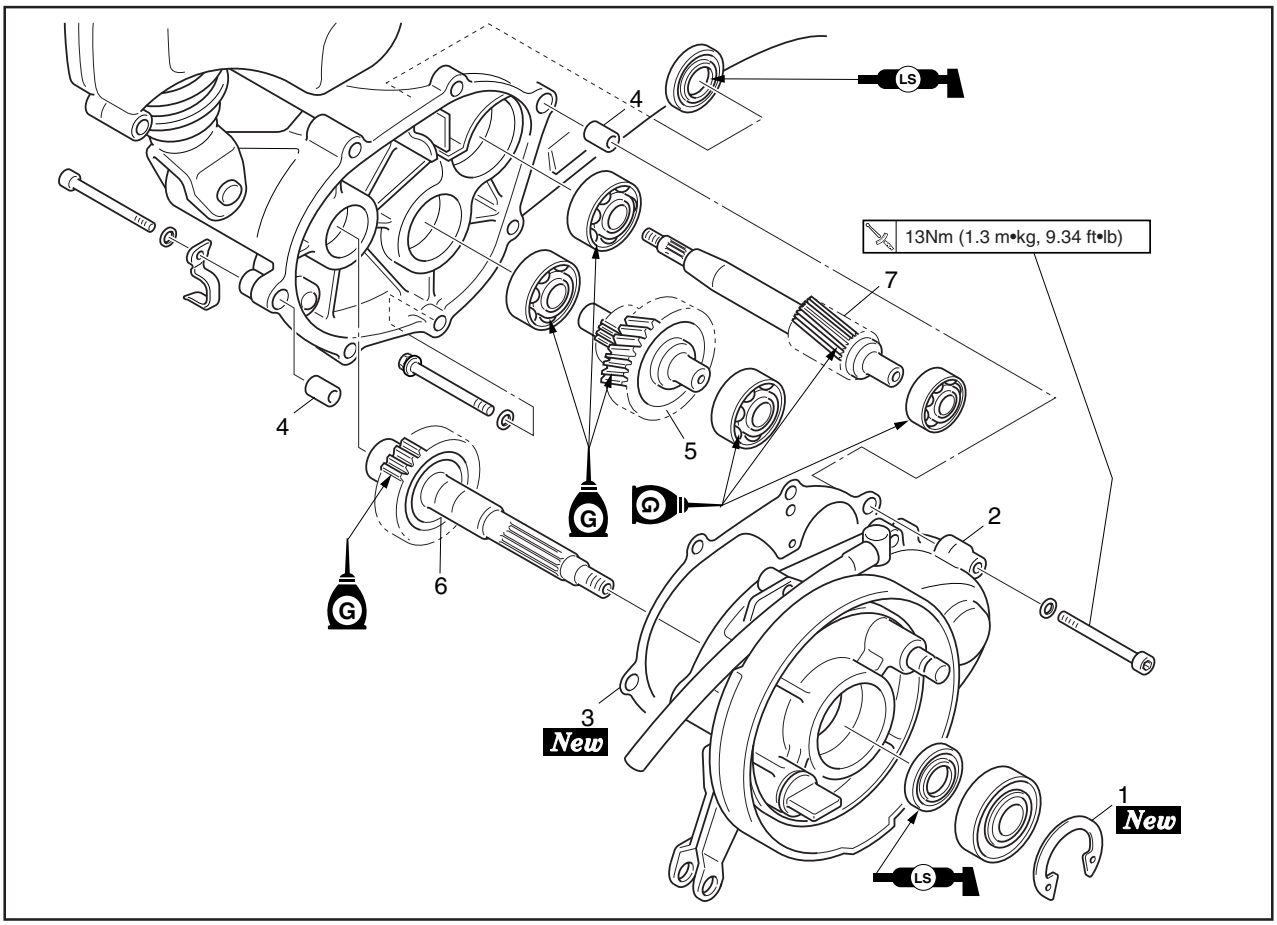
EAS00376
INSTALLING THE OIL PUMP

1. Install:
 - oil pump drive gear ①
 - gasket **New**
 - oil pump assembly②
 - oil pump bolt

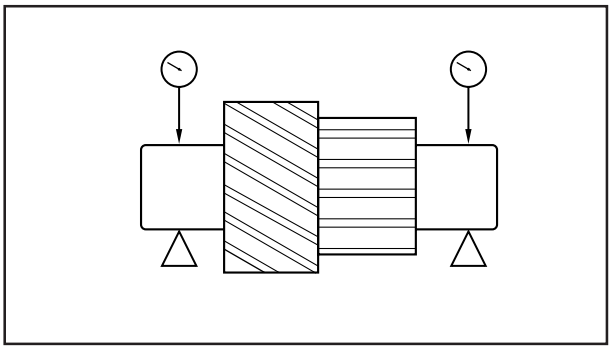
	4 Nm (0.4 m • kg, 2.9 ft • lb)

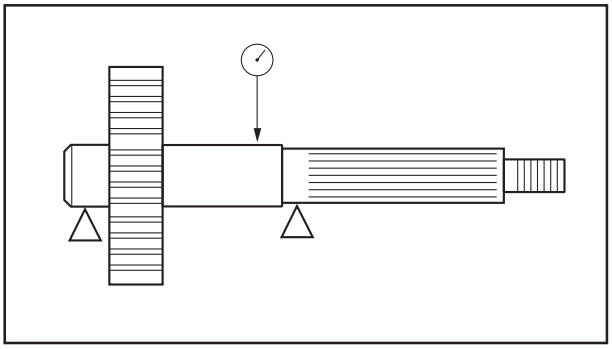
CAUTION:
After tightening the bolts, make sure the oil pump turns smoothly.

EAS00419
TRANSMISSION



Order	Job/Part	Q'ty	Remarks
	Removing the transmission		Remove the parts in the order listed.
	Transmission oil		Drain. Refer to "CHANGING THE TRANSMISSION OIL " in chapter 3.
	Muffler assembly		Refer to "MANIFOLD, AIR FILTER AND MUFFLER ASSEMBLY ".
	Rear fender		
	Rear wheel		Refer to "REAR WHEEL AND BRAKE " in chapter 4.
	Crankcase cover(left)		Refer to "BELT DRIVE ".
	Belt drive		
	Secondary sheave		
1	Circlip	1	
2	Transmission cover	1	
3	Transmission cover gasket	1	
4	Dowel pin	2	
5	Main axle	1	
6	Drive axle	1	
7	Primary drive gear shaft	1	
			For installation, reverse the removal procedure.





EAS00425

CHECKING THE TRANSMISSION

1. Measure:
 - main axle runout
 (with a centering device and dial gauge)
 Out of specification → Replace the main axle.

Main axle runout limit
0.04 mm (0.0002 in)

2. Measure:
 - drive axle runout
 (with a centering device and dial gauge)
 Out of specification → Replace the drive axle.

Primary drive gear shaft runout limit
0.04 mm (0.0002 in)

3 . Check:
 - transmission gears
 Blue discoloration/pitting/wear → Replace the defective gear(s).
 - transmission gear dogs
 Cracks/damage/rounded edges → Replace the defective gear(s).

4 . Check:
 - transmission gear engagement
 (each pinion gear to its respective wheel gear)
 Incorrect → Reassemble the transmission axle assemblies.

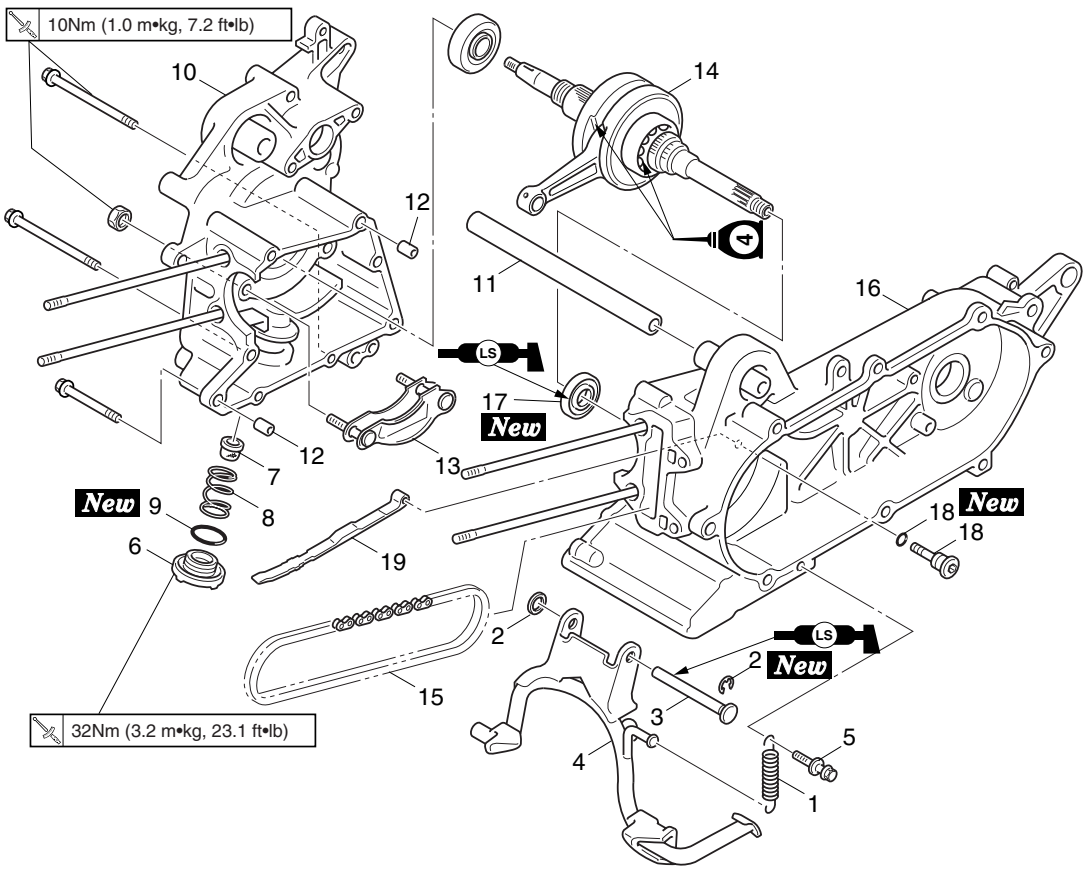
5 . Check:
 - transmission gear movement
 Rough movement → Replace the defective part(s).

6 . Check:
 - circlip
 Bends/damage/looseness → Replace.

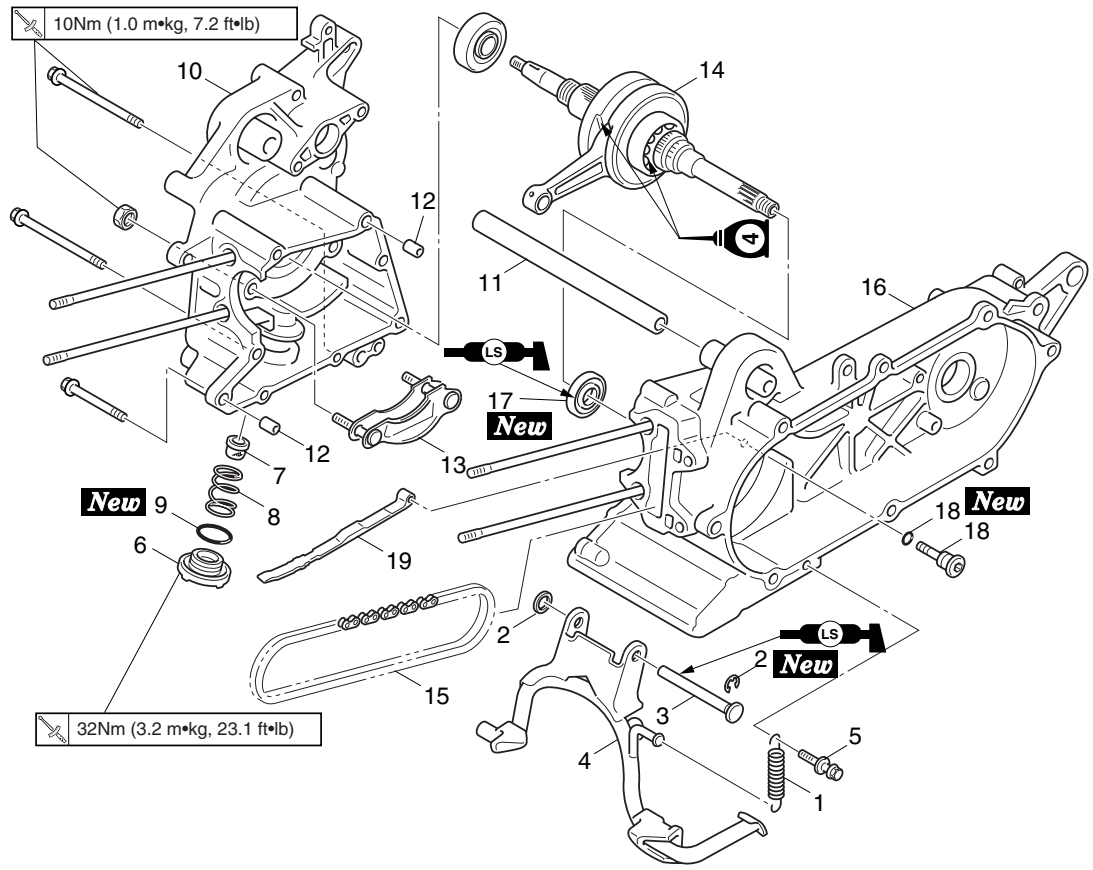
EAS00381

CRANKSHAFT

CRANKSHAFT ASSEMBLY



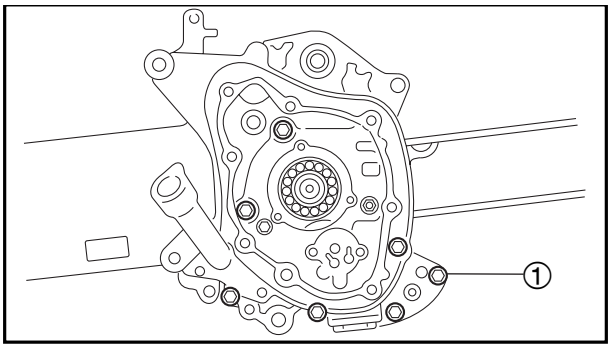
Order	Job/Part	Q'ty	Remarks
	Removing the crankshaft assembly		Remove the parts in the order listed.
	Engine		Refer to " ENGINE " .
	Cylinder head		Refer to "CYLINDER HEAD ".
	Cylinder piston		Refer to "CYLINDER AND PISTON ".
	V-belt, clutch, primary and secondary sheave		Refer to "V-BELT,CLUTCH ,PRIMARY AND SECONDARY SHEAVE ".
	Radiator		Refer to "COOLING SYSTEM"in chapter 6.
	Water pump		
	Starter clutch		Refer to "STARTER CLUTCH AND AC MAGNETO ".
	AC magneto		
	Oil pump		Refer to "OIL PUMP ".
	Transmission		Refer to "TRANSMISSION ".
	Rear wheel		Refer to "REAR WHEEL AND BRAKE " in chapter 4.
1	Tension spring	1	
2	Circlip/Plate washer	1/1	
3	Pin	1	
4	Centerstand	1	



Order	Job/Part	Q'ty	Remarks
5	Hook	1	
6	Drain plug	1	
7	Oil strainer	1	
8	Compression spring	1	
9	O-ring	1	
10	Crankcase (right)	1	
11	Spacer	1	
12	Dowel pin	2	
13	Guide	1	
14	Crankshaft	1	Refer to "DISASSEMBLING THE CRANKCASE "
15	Timing chain	1	
16	Crankcase (left)	1	Refer to "INSTALLING THE CRANKSHAFT "
17	Oil seal	1	
18	Bolt/O-ring	1/1	
19	Timing chain guide	1	
			For installation, reverse the removal procedure.

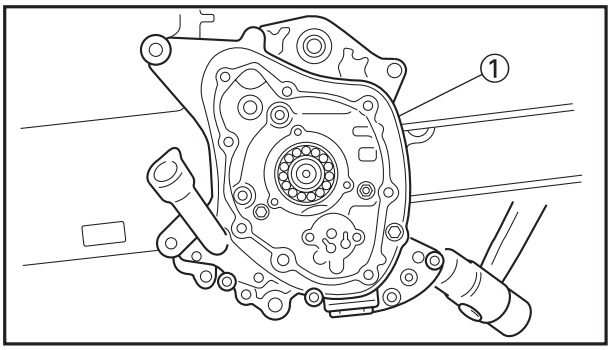
EAS00385
DISASSEMBLING THE CRANKCASE

1. Remove:
 - centerstand assembly



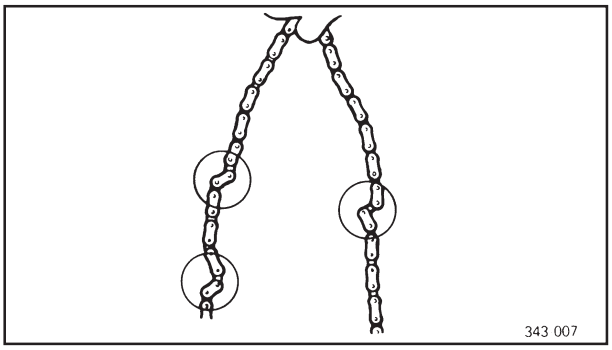
2. Remove:
 - crankcase bolts①

NOTE:
Loosen each bolt 1/4 of a turn at a time, in stages and in a crisscross pattern. After all of the bolts are fully loosened, remove them.



3. Remove:
 - right crankcase①
 - spacer

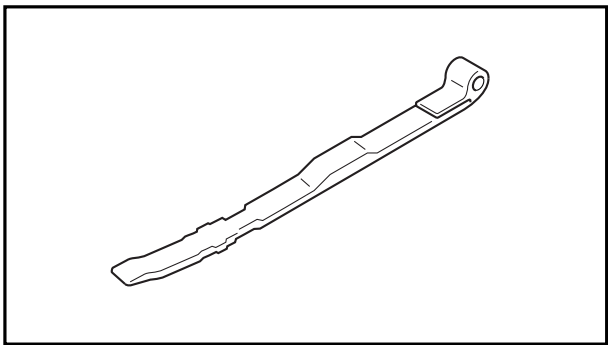
CAUTION:
Tap on one side of the crankcase with a soft-face hammer. Tap only on reinforced portions of the crankcase, not on the crankcase mating surfaces. Work slowly and carefully and make sure the crankcase halves separate evenly.



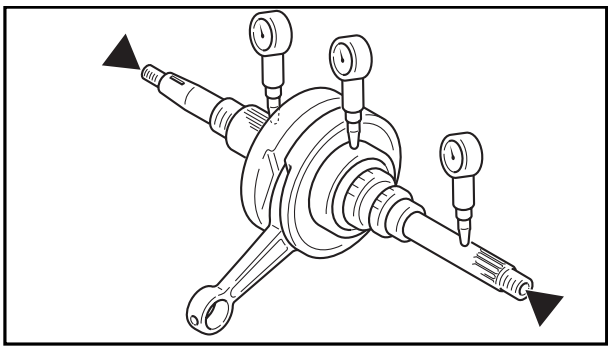
EAS00207

CHECKING THE TIMING CHAIN AND TIMING CHAIN GUIDE

1. Check:
 - timing chain
 Damage/stiffness → Replace the timing chain.



2. Check:
 - timing chain guide (intake side)
 Damage/wear → Replace.



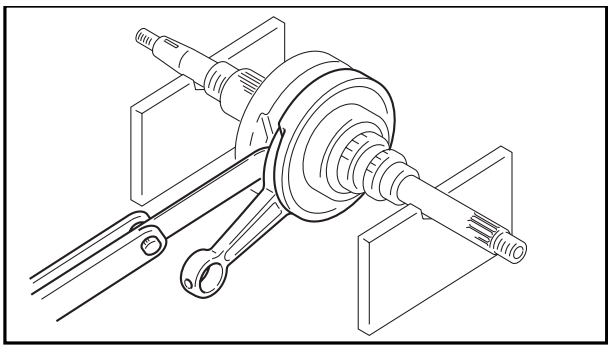
EAS00394

CHECKING THE CRANKSHAFT AND CONNECTING ROD

1. Measure:
 - crankshaft runout
 Out of specification → Replace the crankshaft, bearing or both.

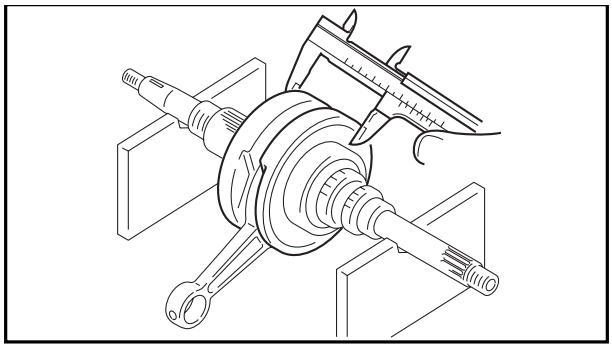
NOTE:
Turn the crankshaft slowly.

Maximum crankshaft runout
0.03 mm (0.001 in)



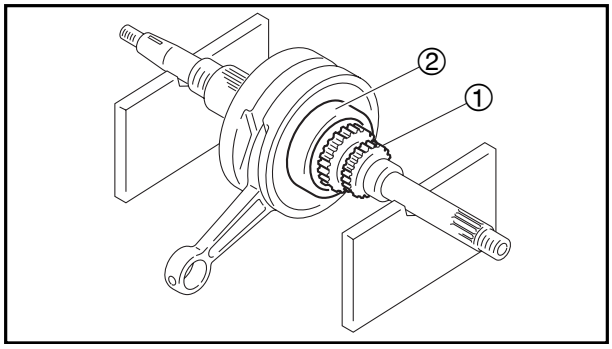
2. Measure:
 - big end side clearance
 Out of specification → Replace the big end bearing, crankshaft pin, or connecting rod.

Big end side clearance
0.15~0.45 mm (0.006~0.018 in)



3. Measure:
 - crankshaft width
 Out of specification → Replace the crankshaft.

Crankshaft width
42.45~42.50 mm (1.671~1.673 in)



4. Check:
 - crankshaft sprocket ①
 Damage/wear → Replace the crankshaft.
 - bearing ②
 Cracks/damage/wear → Replace the crankshaft.
 - oil pump drive gear
 Damage/wear → Replace the crankshaft.

5. Check:
 - crankshaft journal
 Scratches/wear → Replace the crankshaft.
 - crankshaft journal oil passage
 Obstruction → Blow out with compressed air.

EAS00399
CHECKING THE CRANKCASE

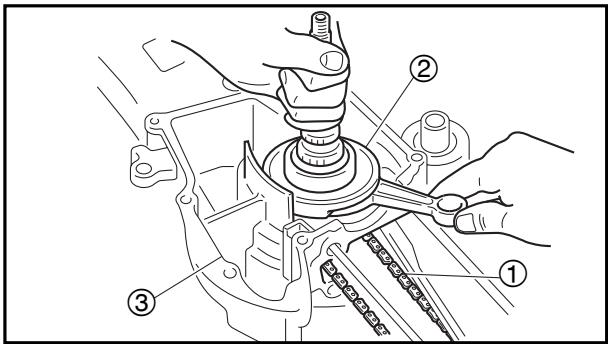
1. Thoroughly wash the crankcase halves in a mild solvent.
2. Thoroughly clean all the gasket surfaces and crankcase mating surfaces.
3. Check:
 - crankcase
 Cracks/damage → Replace.
 - oil delivery passages
 Obstruction → Blow out with compressed air.

EAS00401
CHECKING THE BEARINGS AND OIL SEALS

1. Check:
 - bearings
 Clean and lubricate the bearings, then rotate the inner race with your finger.
 Rough movement → Replace.
2. Check:
 - oil seals
 Damage/wear → Replace.

EAS00402
CHECKING THE CIRCLIPS AND WASHERS

1. Check:
 - circlips
 Bends/damage/looseness → Replace.
 - washers
 Bends/damage → Replace.



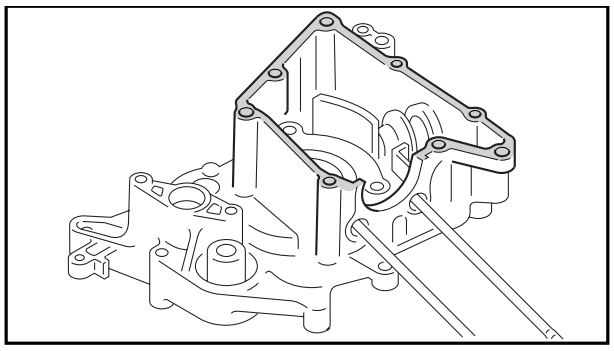
EAS00408
INSTALLING THE CRANKSHAFT

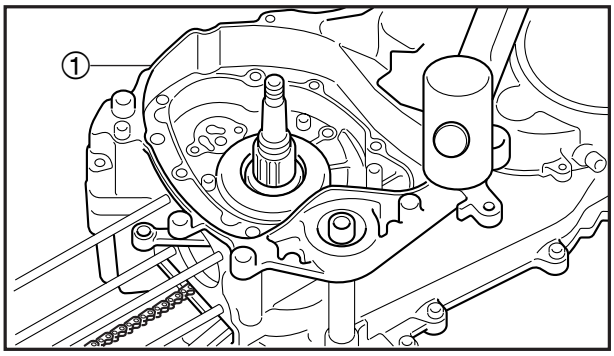
1. Install:
 - timing chain guide (intake side)
 - timing chain①
 - crankshaft assembly②

NOTE:
Install the timing chain so it is not visible through the opening in the left crankcase ③.

CAUTION:
To avoid scratching the crankshaft and to ease the installation procedure, lubricate the oil seal lips with lithium-soap-based grease and each bearing with engine oil.

NOTE:
Put the timing chain in parallel into the crankcase, then use hands to place the crankshaft assembly into the crankcase. Manually rotate the crankshaft to check whether it is tightly engaged with the timing chain. (if not, install again)





EAS00418
ASSEMBLING THE CRANKCASE

1. Thoroughly clean all the gasket mating surfaces and crankcase mating surfaces.
2. Apply:
 - sealant
 (onto the crankcase mating surfaces)

Yamaha bond No. 1215
90890-85505
ACC-11001-05-01

NOTE:
Do not allow any sealant to come into contact with the oil gallery.

3. Install:
 - dowel pins
 - spacer
 - right crankcase①
4. Tighten:
 - crankcase

10 Nm (1.0 m • kg, 7.2 ft • lb)

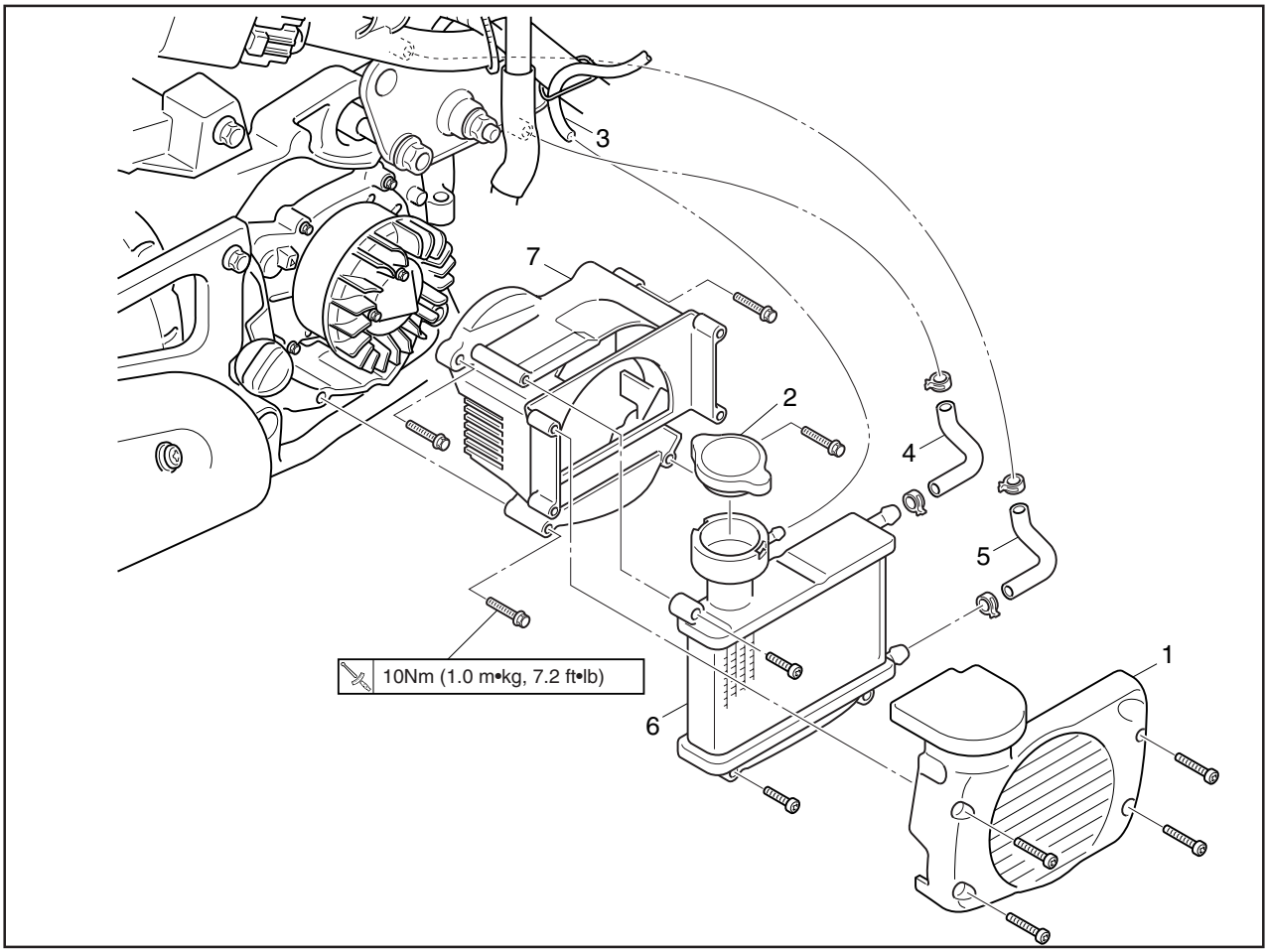
CHAPTER 6
RADIATOR

RADIATOR 6-1
CHECKING THE RADIATOR 6-2
INSTALLING THE RADIATOR 6-3
THERMOSTAT ASSEMBLY 6-4
CHECKING THE THERMOSTAT 6-6
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WATER PUMP 6-8
DISASSEMBLING THE WATER PUMP 6-10
CHECKING THE WATER PUMP 6-10
ASSEMBLING THE WATER PUMP 6-11
INSTALLING THE WATER PUMP 6-12

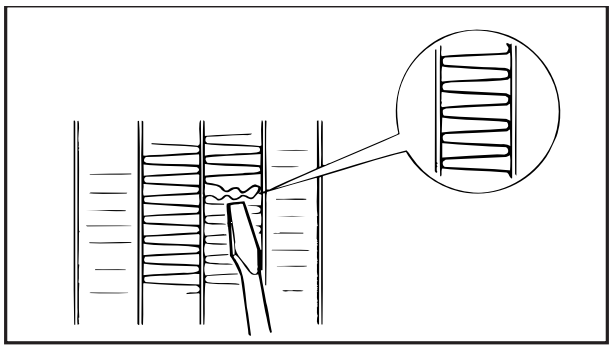
EAS00454

COOLING SYSTEM

RADIATOR



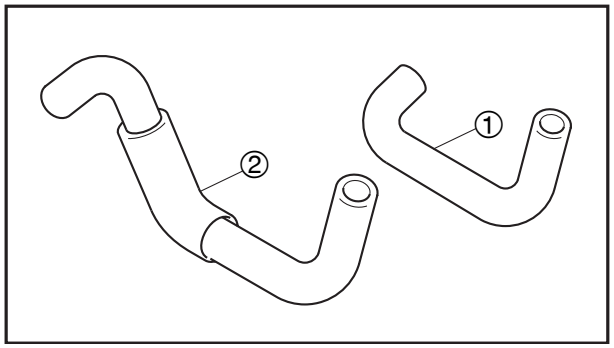
Order	Job/Part	Q'ty	Remarks
	Removing the radiator		Remove the parts in the order listed.
	Seat/Trunk		
	Battery cover/Battery holder		
	Battery/Front cover		Refer to "COVER AND PANEL"in chapter 3.
	Footrest board side cover mole (left and right)		
	Mat/Footrest board		
	Coolant		Drain. Refer to "CHANGING THE COOLANT"in chapter 3.
1	Radiator cover	1	
2	Radiator cap	1	
3	Conduit hose	1	
4	Radiator inlet hose	1	
5	Radiator outlet hose	1	
6	Radiator	1	
7	Fan case	1	
			For installation, reverse the removal procedure.

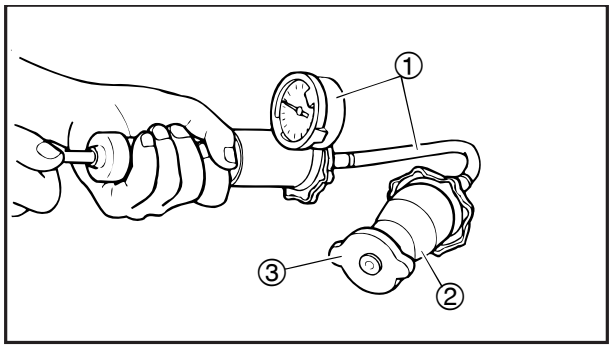


EAS00455
CHECKING THE RADIATOR

1. Check:
 - radiator fins
 Obstruction → Clean.
 Apply compressed air to the rear of the radiator.
 Damage → Repair or replace.

NOTE:
Straighten any flattened fins with a thin, flat-head screwdriver.





2. Check:
 - radiator hoses Radiator inlet hose①
 - radiator pipes Radiator outlet hose②
 Cracks/damage → Replace.
3. Measure:
 - radiator cap opening pressure
 Below the specified pressure → Replace the radiator cap.

Radiator cap opening pressure
93.3 ~ 122.7 kPa
(0.95 ~ 1.25 kg/cm², 13.53 ~ 17.79 psi)

a. Install the radiator cap tester ① and radiator cap tester adapter ② to the radiator cap ③.

Radiator cap tester
90890-01325
YU-24460-01
Radiator cap tester adapter
90890-01352
YU-33984

b. Apply the specified pressure for ten seconds and make sure there is no drop in pressure.

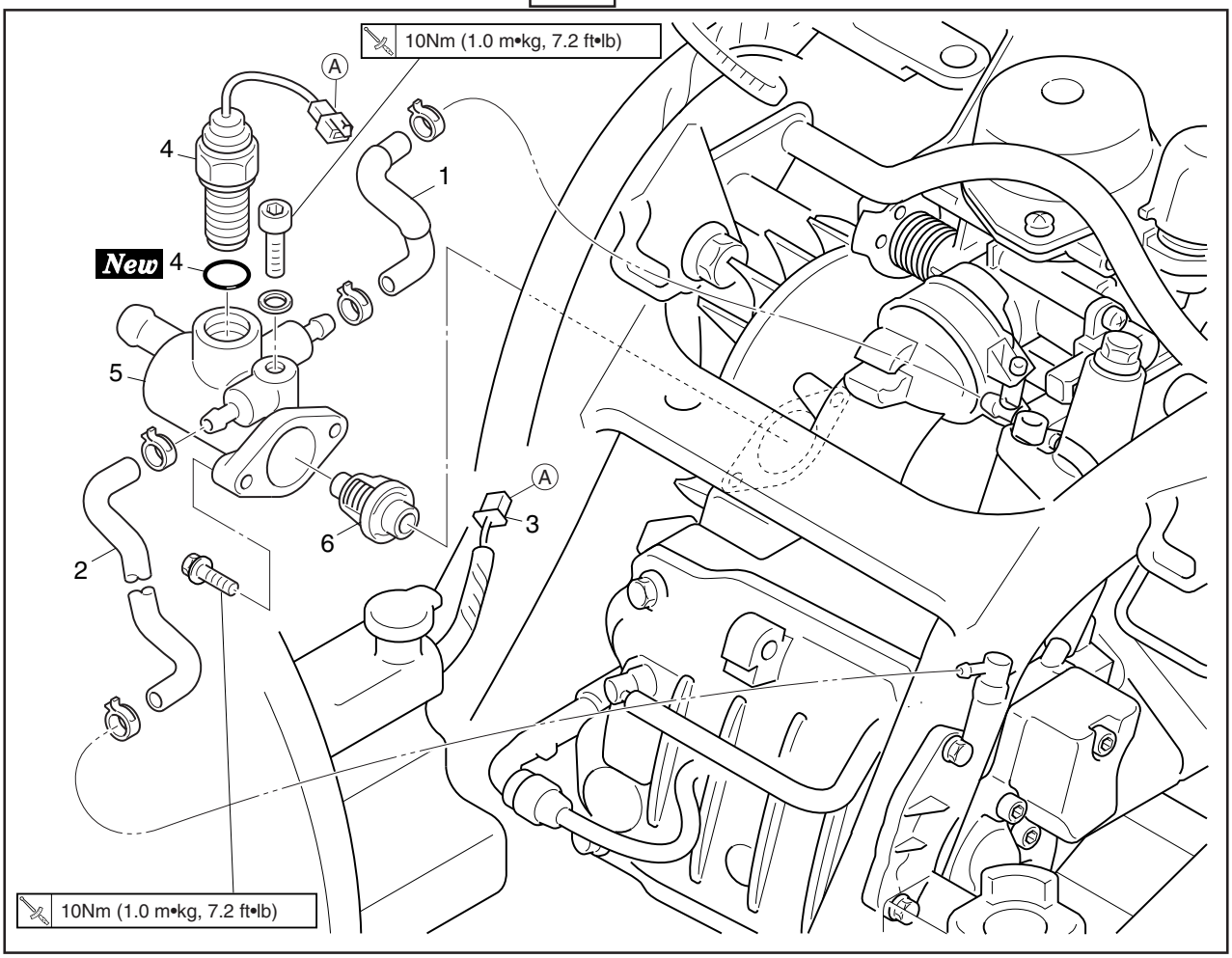
4. Check:
 - radiator fan
 Damage → Replace.
 Malfunction → Check and repair.

EAS00456

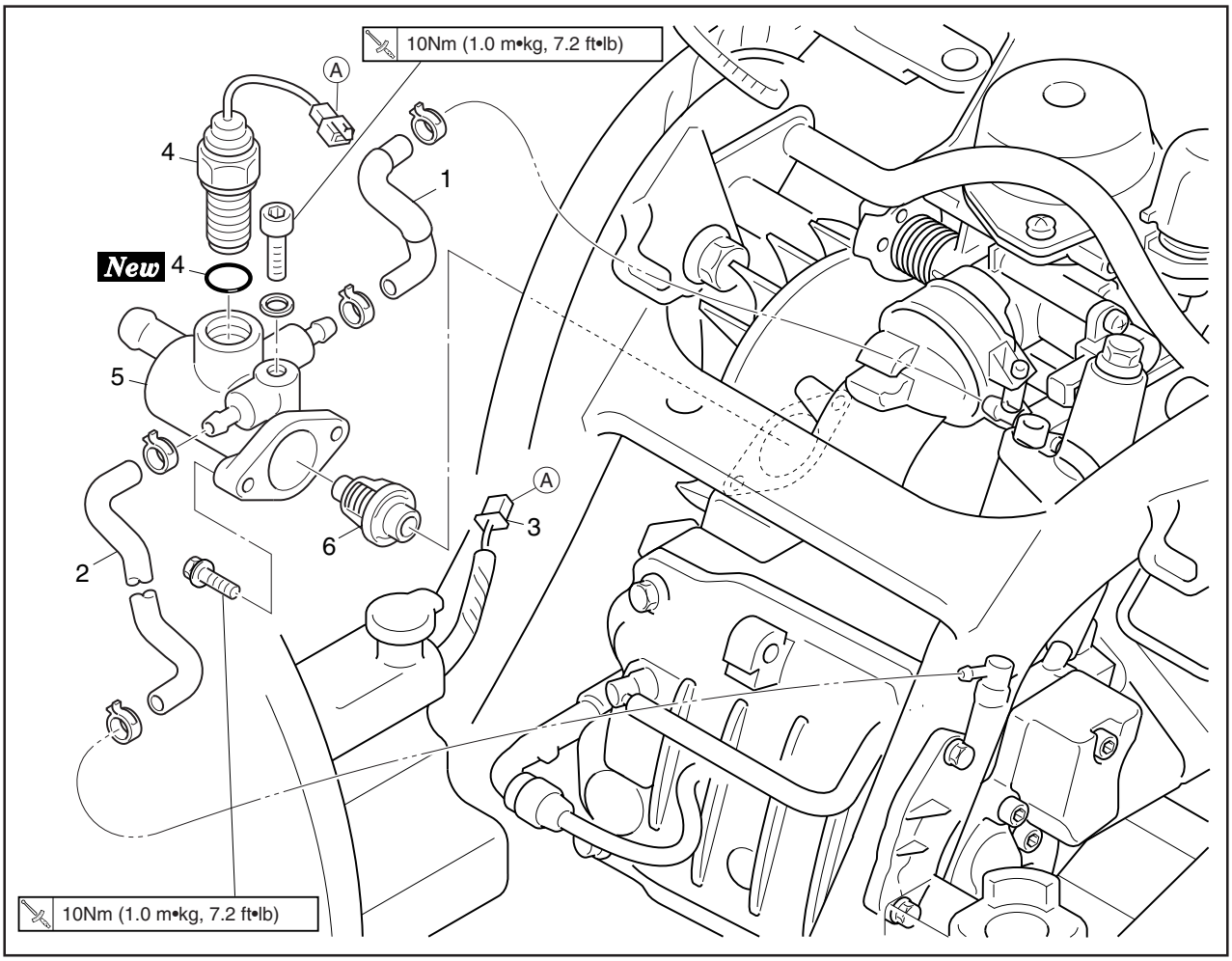
INSTALLING THE RADIATOR

1. Fill:
 - cooling system
 (with the specified amount of the recommended coolant)
 Refer to “CHANGING THE COOLANT” in chapter 3.
2. Check:
 - cooling system
 Leaks → Repair or replace any faulty part.
3. Measure:
 - radiator cap opening pressure
 Below the specified pressure → Replace the radiator cap.
 Refer to “CHECKING THE RADIATOR”.

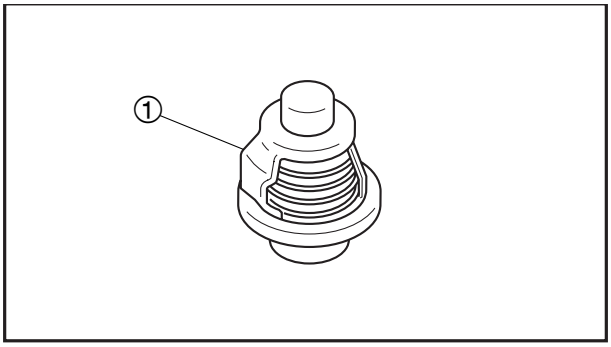
EAS00460
THERMOSTAT ASSEMBLY



Order	Job/Part	Q'ty	Remarks
	Removing the thermostat assembly		Remove the parts in the order listed.
	Seat/Trunk/Rear carrier		Refer to "COVER AND PANEL"in chapter 3.
	Battery cover/Battery holder		
	Battery/Front cover		
	Side cover (left and right)/Rear cover		
	Footrest board side cover mole (left and right)		
	Mat/Footrest board		
	Coolant		Drain. Refer to "CHANGING THE COOLANT"in chapter 3.
	Radiator inlet hose		Refer to "RADIATOR".
1	Thermostat assembly inlet breather hose(to carburetor)	1	Disconnect.
2	Thermostat assembly outlet breather hose(to water pump)	1	
3	Thermo switch lead	1	Disconnect.
4	Thermo switch/O-ring	1/1	
5	Thermostat housing	1	



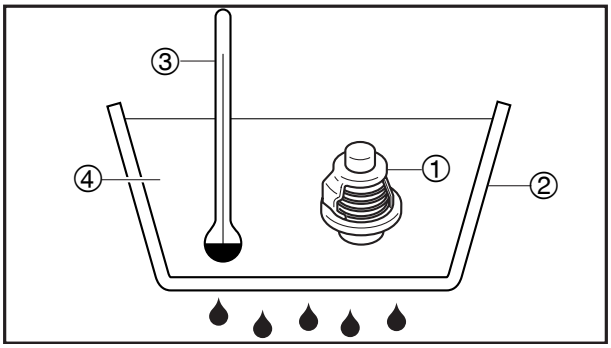
Order	Job/Part	Q'ty	Remarks
6	Thermostat assembly	1	For installation, reverse the removal procedure.



EAS00462
CHECKING THE THERMOSTAT

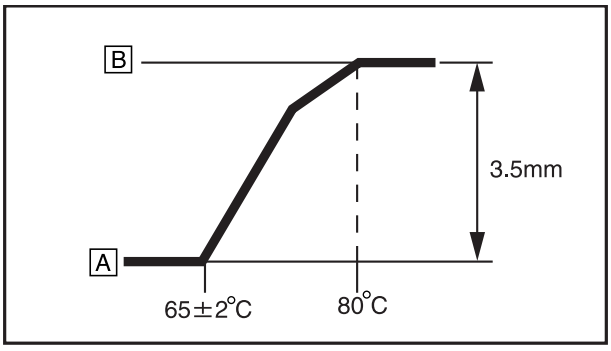
1. Check:
 - ● thermostat ①
 Does not open at 65 ~ 80°C → Replace.

a. Suspend the thermostat in a container filled with water.
b. Slowly heat the water.
c. Place a thermometer in the water.
d. While stirring the water, observe the thermostat and thermometer's indicated temperature.

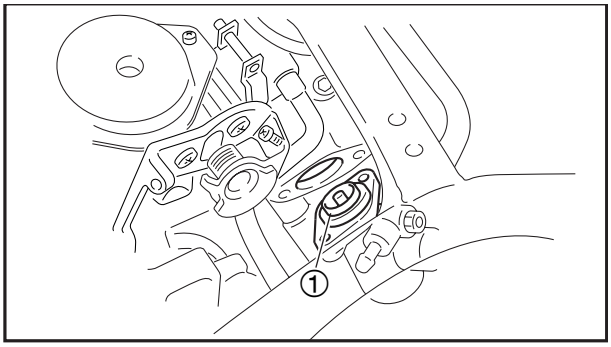


① Thermostat
② Container
③ Thermometer
④ Water
A Fully closed
B Fully open

NOTE:
If the accuracy of the thermostat is in doubt, replace it. A faulty thermostat could cause serious overheating or overcooling.



2. Check:
 - ● thermostat housing
 Cracks/damage → Replace.

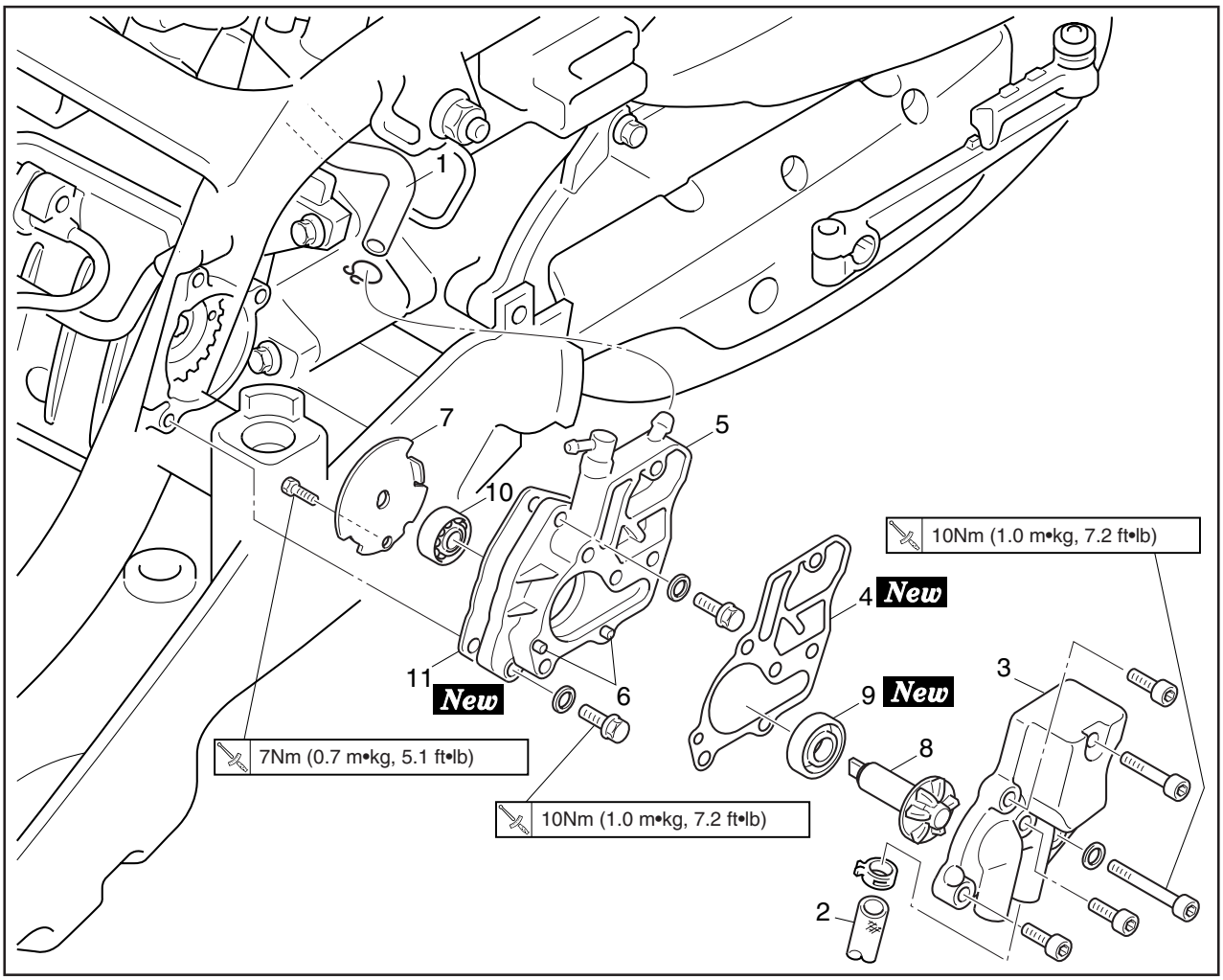


EAS00466

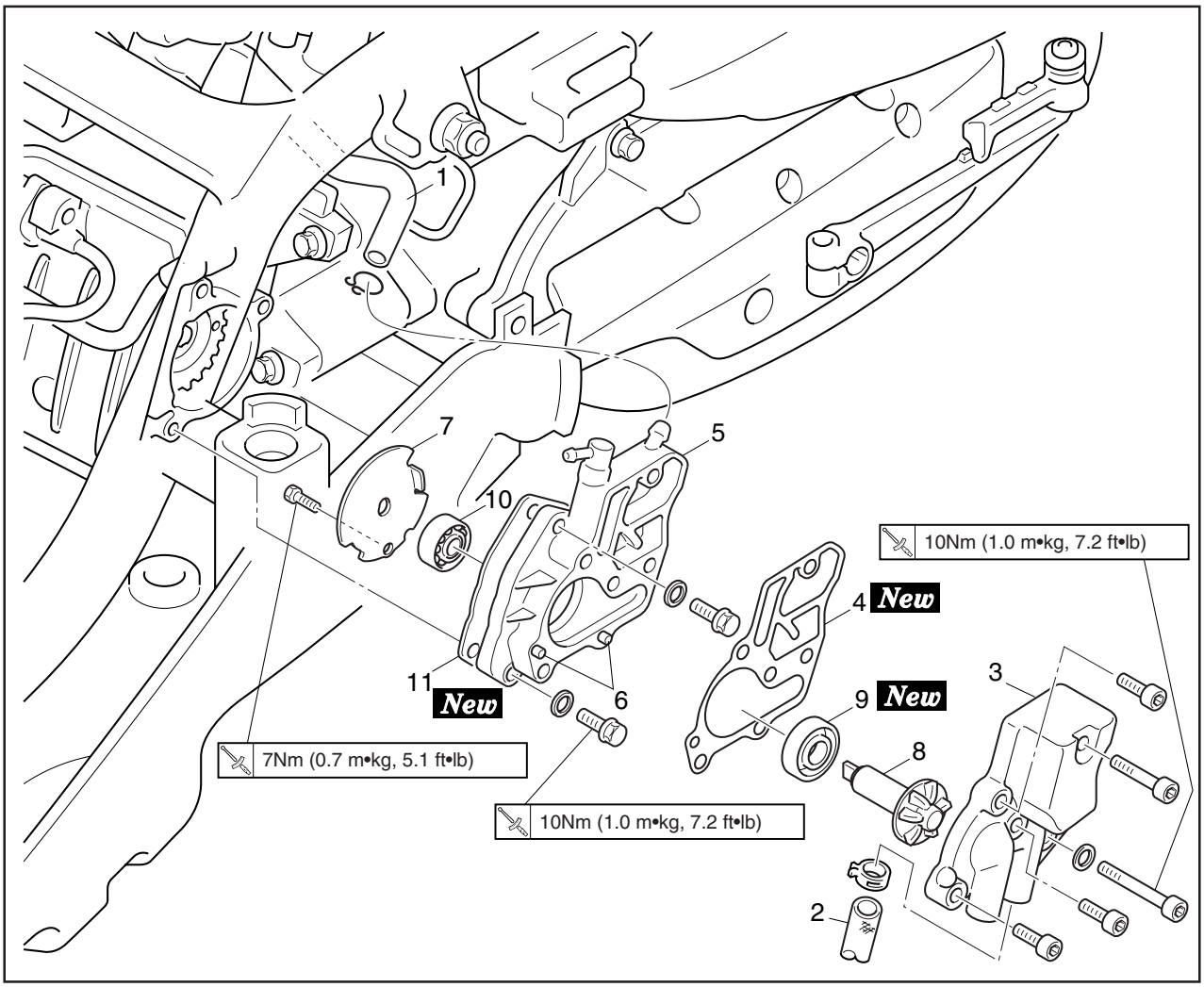
INSTALLING THE THERMOSTAT ASSEMBLY

1. Install:
 - ●thermostat①
 - ●thermostat housing
 - ●thermostat assembly inlet breather hose.
 - ●thermostat assembly outlet breather hose.
2. Fill:
 - ●cooling system
 (with the specified amount of the recommended coolant)
 Refer to “CHANGING THE COOLANT” in chapter 3.
3. Check:
 - ●cooling system
 Leaks → Repair or replace any faulty part.
4. Measure:
 - ●radiator cap opening pressure
 Below the specified pressure → Replace the radiator cap.
 Refer to “CHECKING THE RADIATOR”.

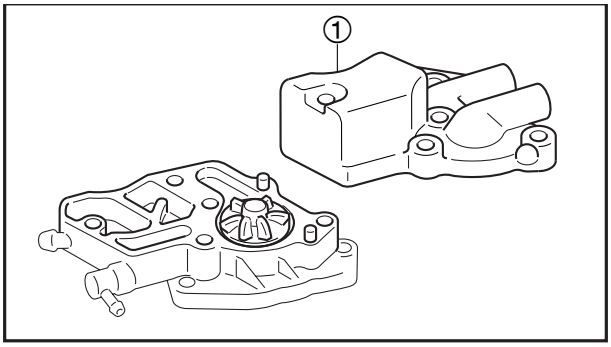
EAS00468
WATER PUMP



Order	Job/Part	Q'ty	Remarks
	Removing the water pump		Remove the parts in the order listed.
	Seat/Trunk/Rear carrier		Refer to "COVER AND PANEL"in chapter 3.
	Battery cover/Battery holder		
	Battery/Front cover		
	Side cover (left and right)/Rear cover		
	Footrest board side cover mole (left and right)		
	Mat/Footrest board		
	Coolant		Drain. Refer to "CHANGING THE COOLANT"in chapter 3.
	Thermostat assembly outlet breather hose		Refer to "THERMOSTAT ASSEMBLY".
	Radiator outlet hose		Refer to "RADIATOR".
1	Breather hose	1	Disconnect.
2	Outlet hose(to cylinder)	1	
3	Water pump housing cover	1	
4	Gasket	1	

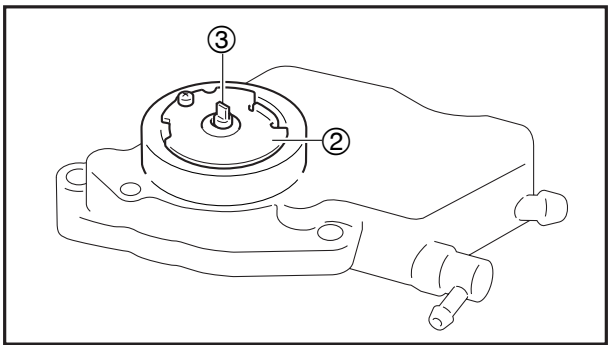


Order	Job/Part	Q'ty	Remarks
5	Water pump housing	1	
6	Dowel pin	2	
7	Plate	1	
8	Impeller shaft	1	
9	Oil seal	1	
10	Bearing	1	
11	Gasket	1	
			For installation, reverse the removal procedure.



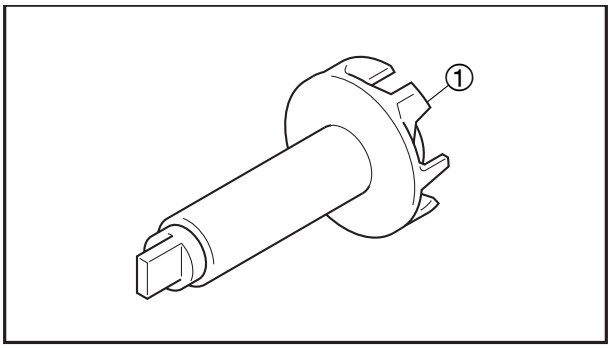
EAS00471
DISASSEMBLING THE WATER PUMP

1. Remove:
 - ●water pump housing cover①
 - ●dowel pin
 - ●gasket



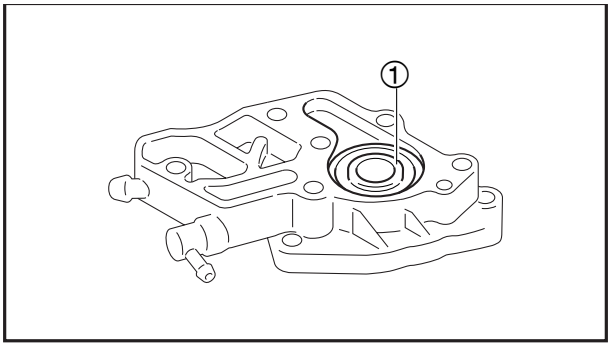
2. Remove:
 - ●plate ②
 - ●impeller shaft ③
 - ●gasket
 - ●oil seal
 (with a thin, flat-head screwdriver)
 - ●bearing

NOTE:
Remove the oil seal from the inside of the water pump housing.
Remove the bearing from the inside of the water pump housing.

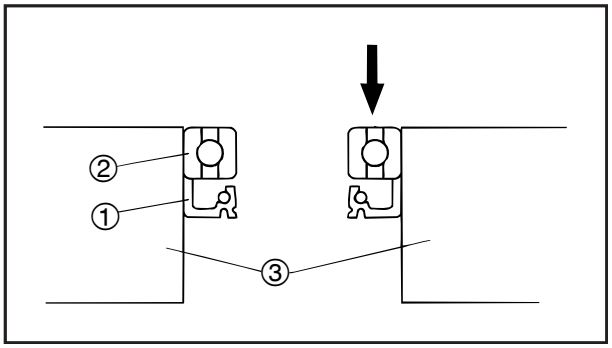


EAS00474
CHECKING THE WATER PUMP

1. Check:
 - ●water pump housing cover
 - ●water pump housing
 - ●impeller ①
 Cracks/damage/wear → Replace.



2. Check:
 - ●water pump seal ①
 Cracks/damage/wear → Replace.
3. Check:
 - ●bearing
 Rough movement → Replace.
4. Check:
 - ●radiator outlet hose
 Cracks/damage/wear → Replace.



EAS00475

ASSEMBLING THE WATER PUMP

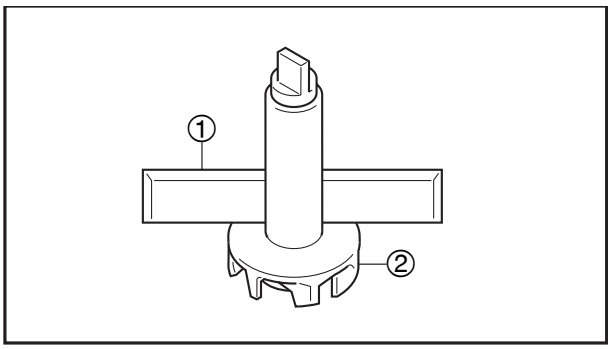
1. Install:
 - oil seal **New** ①
 (into the water pump housing ③)
 - bearing ②

NOTE:

- Before installing the oil seal, apply tap water or coolant onto its out surface.
- Install the oil seal with a socket that matches its outside diameter.

CAUTION:

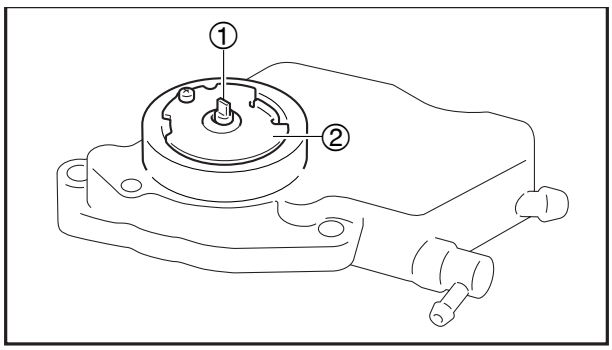
Never lubricate the water pump seal surface with oil or grease.



2. Measure:
 - impeller shaft tilt
 Out of specification → Replace the impeller shaft.

	Impeller shaft tilt limit **0.15 mm (0.006 in)**

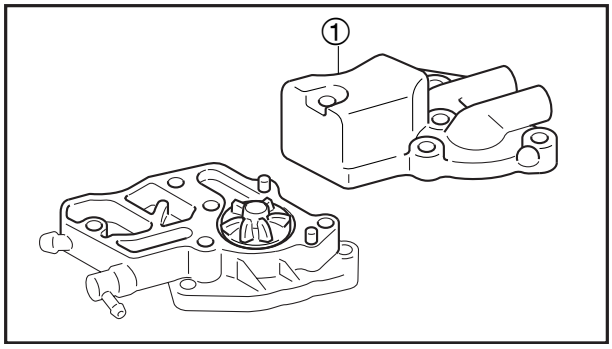
① Straightedge
② Impeller



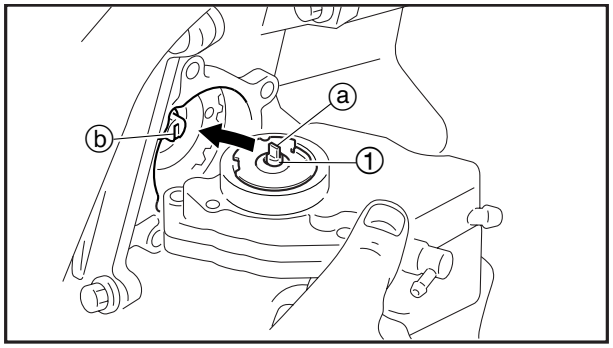
3. Install:
 - impeller shaft①
 - plate②

CAUTION:

After installation, check that the impeller shaft rotates smoothly.



4. Install:
 - gasket **New**
 - water pump housing cover①



EAS00478
INSTALLING THE WATER PUMP

1. Install:
 - gasket **New**
 - water pump assembly ①

10 Nm (1.0 m • kg, 7.2 ft • lb)

NOTE:
Align the slit ⓐ on the impeller shaft with the projection ⓑ on the camshaft sprocket bolt.

2. Fill:
 - cooling system
 (with the specified amount of the recommended coolant)
 Refer to "CHANGING THE COOLANT" in chapter 3.
3. Check:
 - cooling system
 Leaks → Repair or replace the faulty part.
4. Measure:
 - radiator cap opening pressure
 Below the specified pressure → Replace the radiator cap.
 Refer to "CHECKING THE RADIATOR".

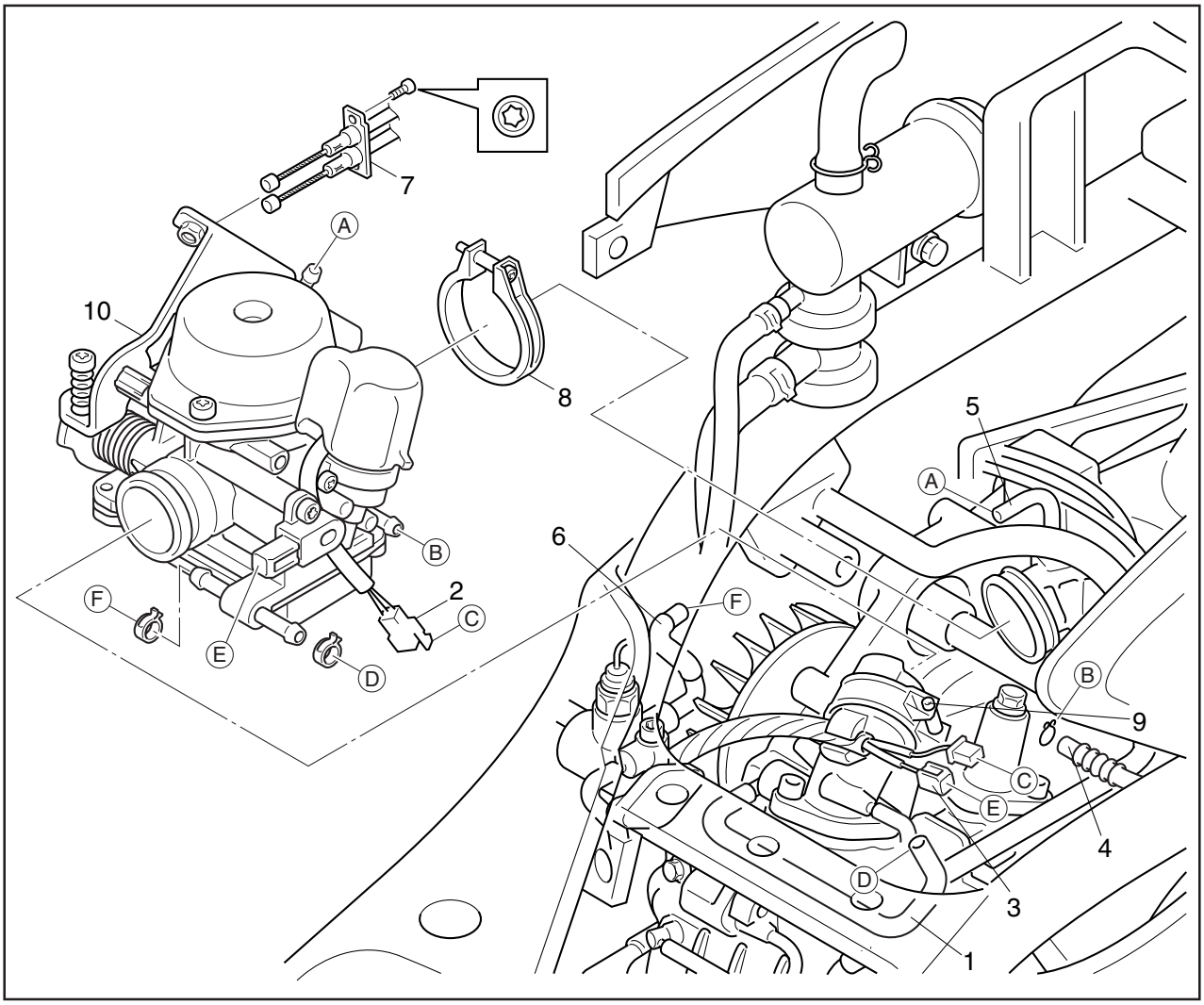
CHAPTER 7
CARBRETOR

CARBURETOR 7-1
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ASSEMBLING THE CARBURETOR 7-6
INSTALLING THE CARBURETOR 7-7
MEASURING AND ADJUSTING THE FUEL LEVEL 7-8
CHECKING THE AUTOCHOKE UNIT 7-9
CHECKING THE FUEL COCK 7-10
CHECKING THE THROTTLE POSITION SENSOR 7-11
AIR INDUCTION SYSTEM 7-12
CHECKING THE AIR INDUCTION SYSTEM 7-13

EAS00480

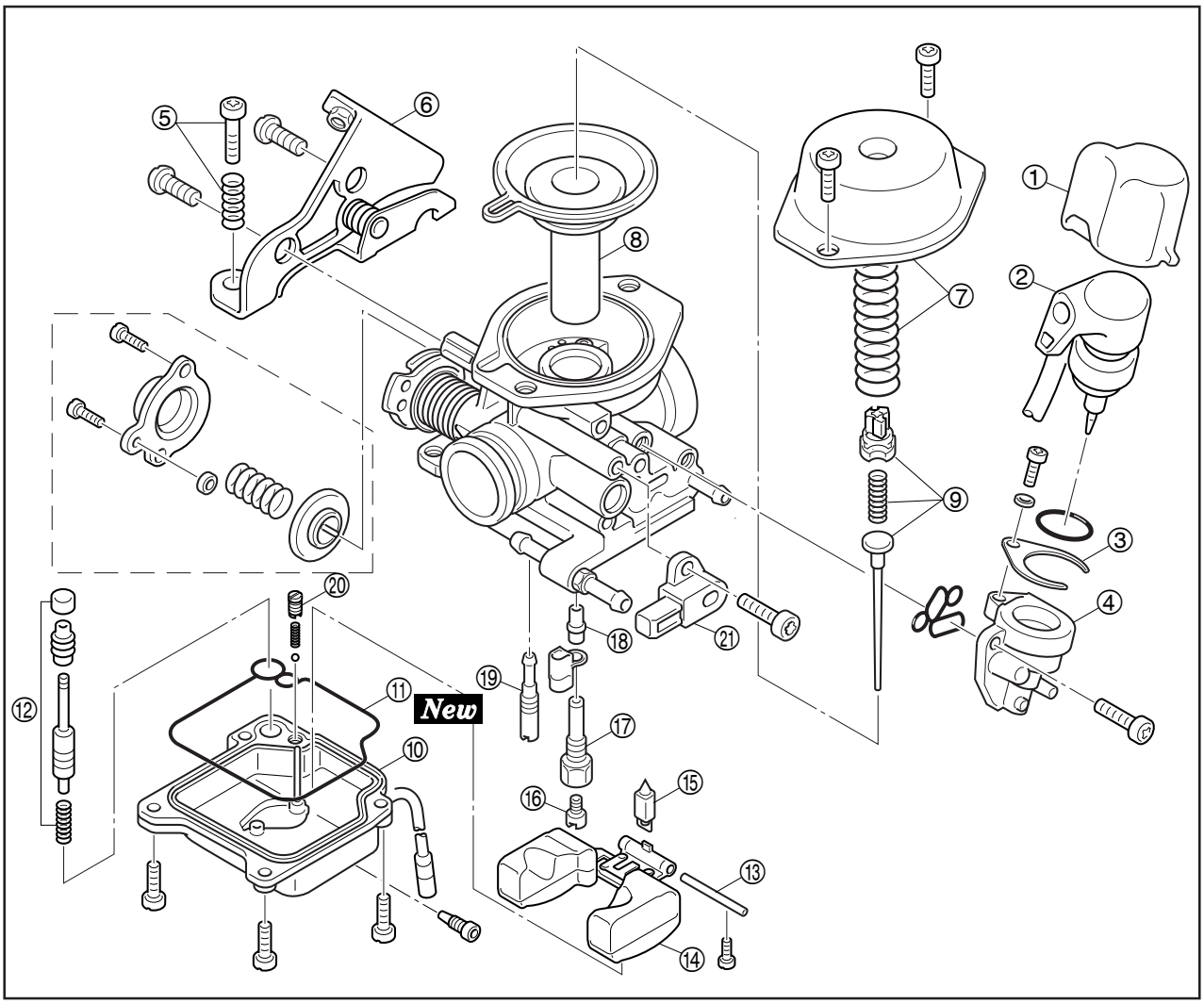
CARBURETOR

CARBURETOR

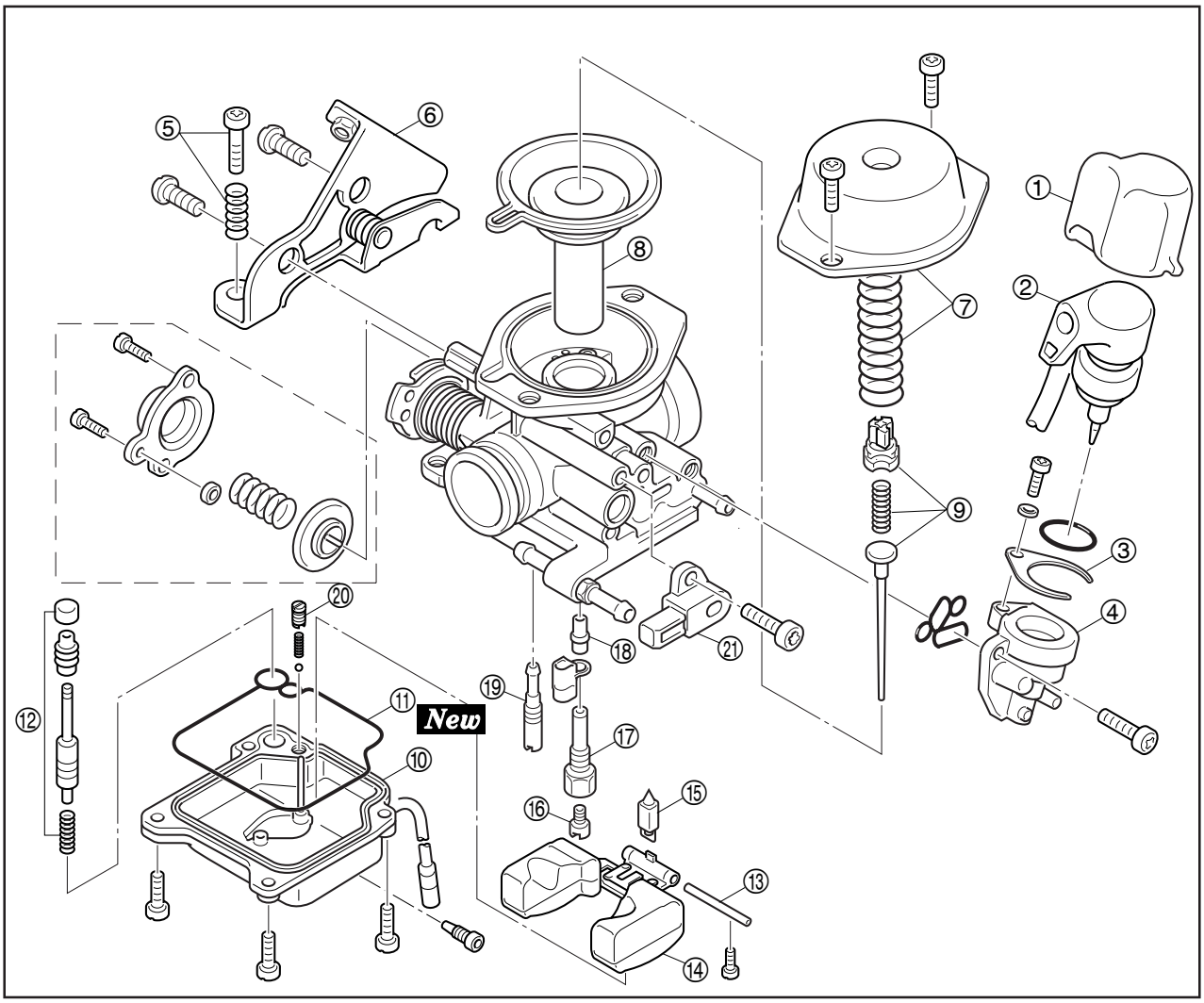


Order	Job/Part	Q'ty	Remarks
	Removing the carburetor		Remove the parts in the order listed.
	Mat/Seat/Trunk		Refer to "COVER AND PANEL"in chapter 3.
	Battery cover/Front cover		
1	Hose(to cylinder head)	1	
2	Auto choke lead	1	Disconnect.
3	Throttle position sensor lead	1	Disconnect.
4	Fuel hose	1	Disconnect.
5	Compensator hose	1	Disconnect.
6	Thermostat assembly inlet breather hose	1 1	Disconnect.
7	Throttle cable kit	1	
8	Clamp(air filter assembly)	1	
9	Manifold clamp screw	1	Lossen.
10	Carburetor assembly	1	
			For installation, reverse the removal procedure.

EAS00483



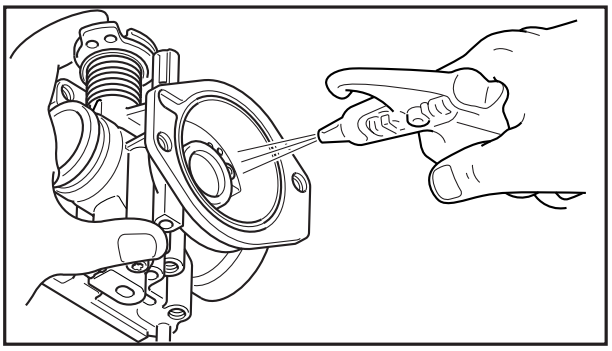
Order	Job/Part	Q'ty	Remarks
	Disassembling the carburetor		Remove the parts in the order listed.
①	Auto choke cap	1	
②	Auto choke unit	1	
③	Auto choke holder	1	**CAUTION:**
④	Auto choke seat	1	**Before leaving the factory, throttle position sensor should be measured and adjusted with a precision instrument. Any adjustment is strictly prohibited.**
⑤	Throttle stop screw kit	1	
⑥	Bracket	1	
⑦	Vacuum chamber cover/Piston valve spring	1/1	
⑧	Piston valve	1	**When changing, use carburetor for final assembly exchange. Supplier should not make any changes after dismounting the adjusting bolt.**
⑨	Jet needle kit	1	
⑩	Float chamber	1	
⑪	Float chamber rubber gasket	1	
⑫	Accelerator pump assembly	1	
⑬	Float pin	1	Refer to "ASSEMBLING THE CARBURETOR".
⑭	Float	1	
⑮	Needle valve	1	
⑯	Main jet	1	



Order	Job/Part	Q'ty	Remarks
⑰	Main nozzle	1	
⑱	Nedle jet	1	
⑲	Slow air jet	1	
⑳	Slow jet	1	
㉑	Throttle position sensor	1	
			For assembly, reverse the disassembly procedure.

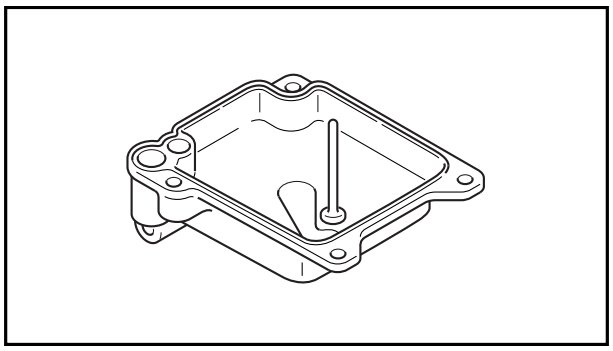
EAS00485
CHECKING THE CARBURETOR

1. Check:
 - carburetor body
 - float chamber
 Cracks/damage → Replace.



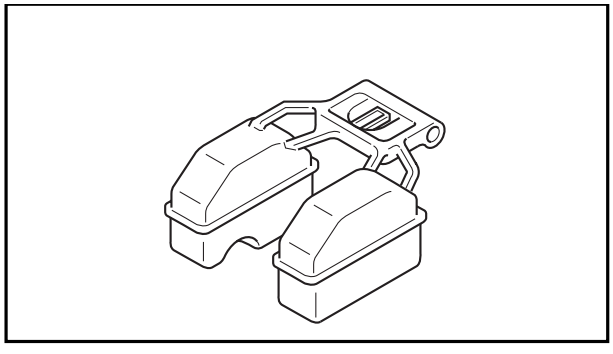
2. Check:
 - fuel passages
 Obstruction → Clean.

a. Wash the carburetor in a petroleum-based solvent. Do not use any caustic carburetor cleaning solution.
b. Blow out all of the passages and jets with compressed air.

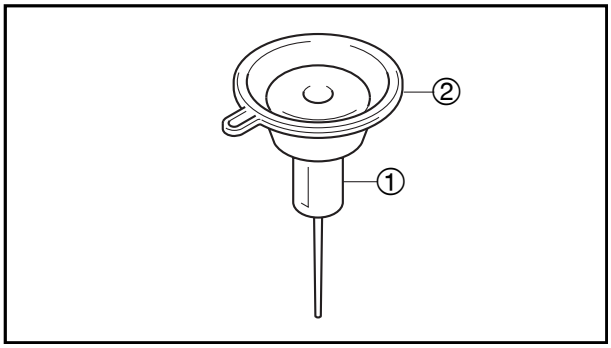


3. Check:
 - float chamber body
 Dirt → Clean.

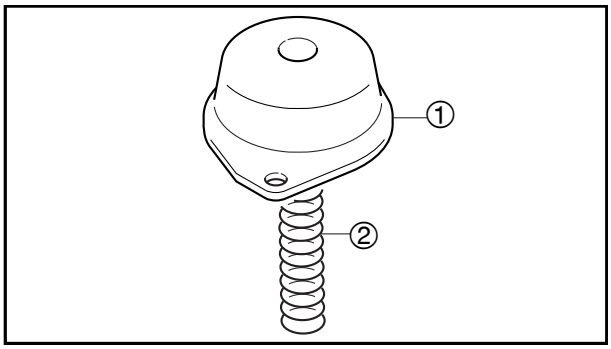
4. Check:
 - float chamber rubber gasket
 Cracks/damage/wear → Replace.



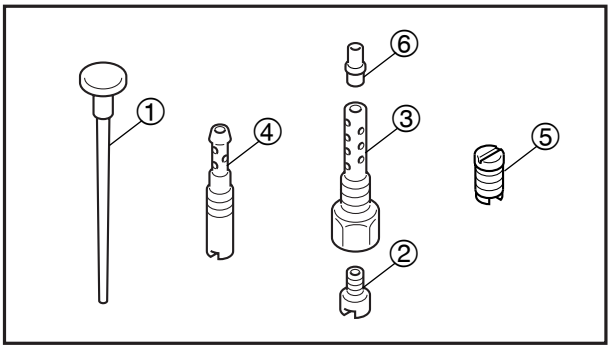
5. Check:
 - float
 Damage → Replace.



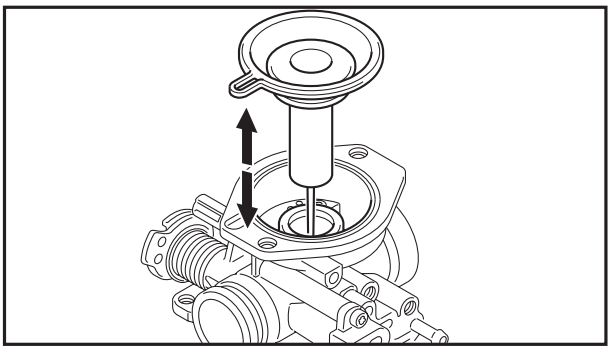
6. Check:
 - needle valve
 Damage/obstruction/wear→ Replace.
7. Check:
 - piston valve ①
 Damage/scratches/wear→ Replace.
 - piston valve diaphragm ②
 Cracks/tears → Replace.



8. Check:
 - vacuum chamber cover ①
 - piston valve spring ②
 Cracks/damage → Replace.



9. Check:
 - jet needle ①
 - main jet ②
 - main nozzle ③
 - slow air jet ④
 - slow jet ⑤
 - needle jet ⑥
 Bends/damage/wear → Replace.
 Obstruction → Clean.
 Blow out the jets with compressed air.



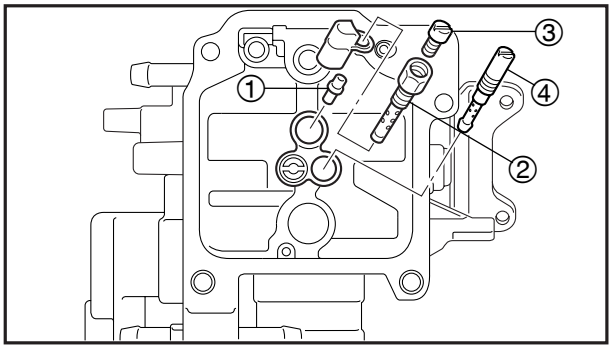
10. Check:
 - piston valve movement
 Insert the piston valve into the carburetor body and move it up and down.
 Tightness → Replace the piston valve.
11. Check:
 - vacuum hoses
 - fuel hoses
 Cracks/damage/wear → Replace.
 Obstruction → Clean.
 Blow out the hoses with compressed air.

EAS00487

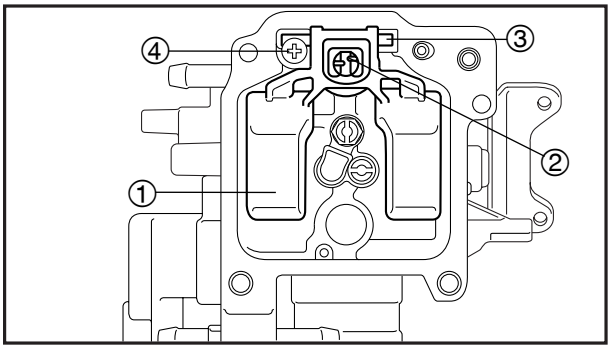
ASSEMBLING THE CARBURETOR

CAUTION:

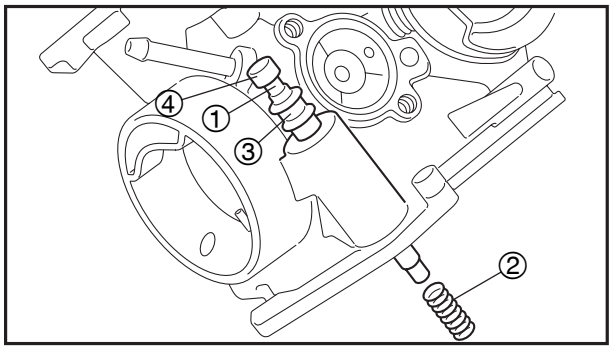
- **Before assembling the carburetor, wash all of the parts in a petroleum-based solvent.**
- **Always use a new gasket.**



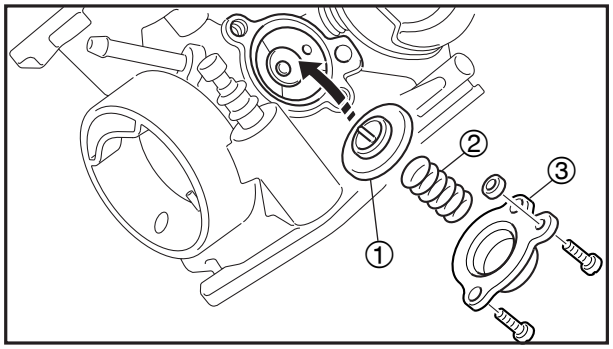
1. Install:
 - needle jet ①
 - main nozzle②
 - main jet ③
 - slow air jet ④



2. Install:
 - float ①
 - needle valve ②
 - float pin ③
 - screw ④
3. Install:
 - float chamber rubber gasket **New**
 - float chamber



4. Install:
 - accelerator pump diaphragm ①
 - accelerator pump spring ②
 - boot③
 - accelerator pump diaphragm gasket④
 - float chamber body



5 . Install:
 - coasting enricher diaphragm①
 - compression spring②
 - coasting enricher cover③
6. Install:
 - jet needle kit
 - piston valve

7. Install:
 - piston valve spring
 - vacuum chamber cover
8. Install:
 - bracket
 - auto choke unit
 - throttle position sensor

EAS00492
INSTALLING THE CARBURETOR

1. Adjust:
 - engine idling speed



Engine idling speed
2,000 ~ 2,400r/min

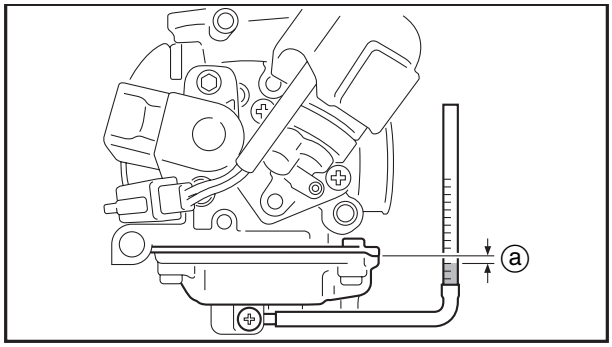
Refer to “ADJUSTING THE ENGINE IDLING SPEED” in chapter 3.

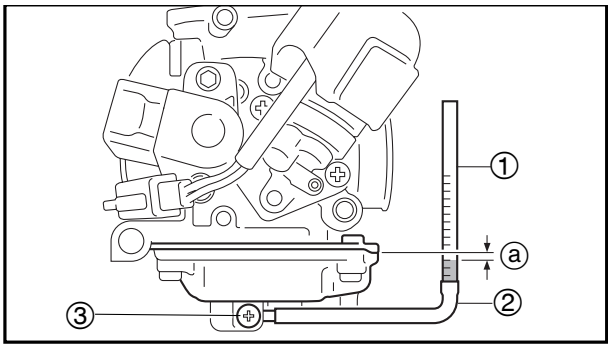
2. Adjust:
 - throttle cable free play



Throttle cable free play (at the flange of the throttle grip)
1.5 ~ 3.5 mm (0.059 ~ 0.138 in)

Refer to “ADJUSTING THE THROTTLE CABLE FREE PLAY” in chapter 3.





EAS00498

MEASURING AND ADJUSTING THE FUEL LEVEL

1. Measure:
 - fuel level ⓐ

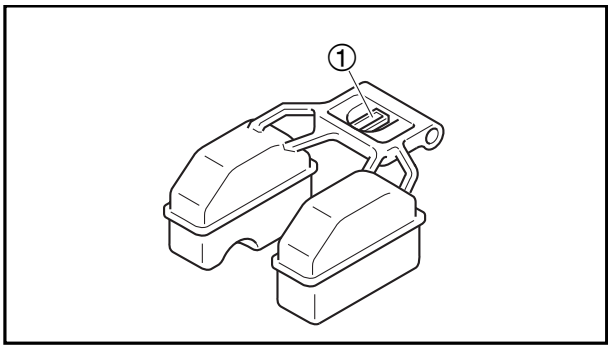
 Out of specification → Adjust.

Fuel level (below the float chamber mating surface)
6.6~7.6 mm (0.26~0.30 in)

a. Stand the motorcycle on a level surface.
b. Place the motorcycle on a suitable stand to ensure that the motorcycle is standing straight up.
c. Install the fuel level gauge ① onto the fuel drain pipe ②

Fuel level gauge
90890-01312 (YM-01312-A)

d. Loosen the fuel drain screw
e. Hold the fuel level gauge vertically next to the float chamber ③.
f. Measure the fuel level ⓐ.



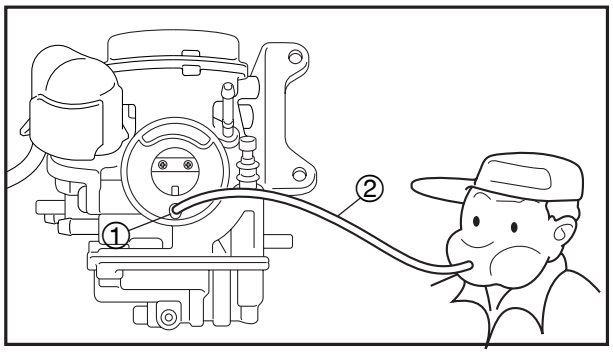
2. Adjust:
 - fuel level

a. Remove the carburetor.
b. Check the needle valve seat and needle valve.
c. If either is worn, replace them as a set.
d. If both are fine, adjust the float level by slightly bending the float tang ①.
e. Install the carburetor.
f. Measure the fuel level ⓐ again.
g. Repeat steps (a) to (f) until the fuel level is within specification.

EAS00503
CHECKING THE AUTOCHOKE UNIT

NOTE:
When checking the autochoke unit, the ambient temperature must be lower than 45°C.

1. Remove:
 - carburetor
2. Check:
 - autochoke unit

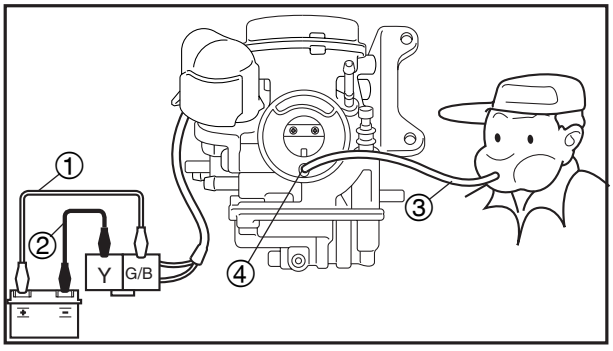


a. Connect a 3.3-mm hose ② to the starter air passage ① and blow into the hose.

NOTE:
When the starter plunger is open, air should come out of the other side of the starter air passage.

Starter plunger opens	Perform step (3).
Starter plunger closes	Replace the autochoke unit.

3. Check:
 - autochoke unit

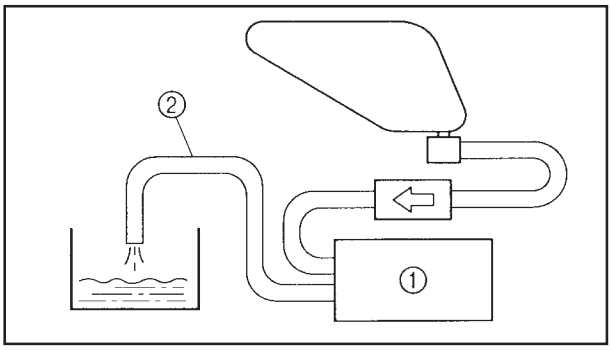


a. Connect the autochoke unit leads to a 12.0-V battery for five minutes.

Positive battery lead ① → green/black Negative battery lead ② → yellow

b. Connect a 3.3-mm hose ③ to the starter air passage ④ and blow into the hose.

Starter plunger opens.	Replace the autochoke unit.
Starter plunger closes.	Autochoke is OK.



EAS00504
CHECKING THE FUEL COCK

1. Remove:
 - seat/trunk
 - battery cover
 - front cover

 Refer to “COVER AND PANEL”in chapter 3.
2. Check:
 - fuel cock①

a. Disconnect the fuel cock to carburetor fuel hose②from the carburetor .
b. Place a container under the end of the fuel hose.
c. Start the engine and check if fuel flows from the fuel hose ②.

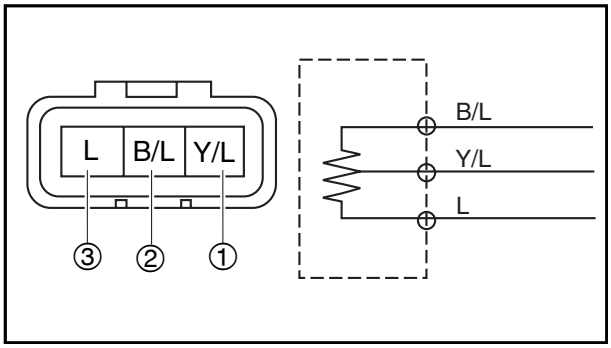
Fuel flows.	Fuel cock is OK.
Fuel does not flow.	Replace the fuel cock.

d. Stop the engine and check if the fuel stops flowing from the fuel hose ②.

Fuel stops flowing.	Fuel cock is OK.
Fuel flows.	Replace the fuel cock.

3. Install:
 - front cover
 - battery cover
 - seat/trunk

 Refer to “COVER AND PANEL”in chapter 3.



CHECKING THE THROTTLE POSITION SENSOR

NOTE:
Before checking the throttle position sensor, the engine idling speed should be properly adjusted.

1. Check:
 - ●throttle position sensor

a. Turn the main switch to “ON”.
b. Connect the pocket tester (DC 20V) to the throttle position sensor.

Tester positive lead → yellow/blue ① Tester negative lead →black/blue②

c. Check the throttle position sensor input voltage.

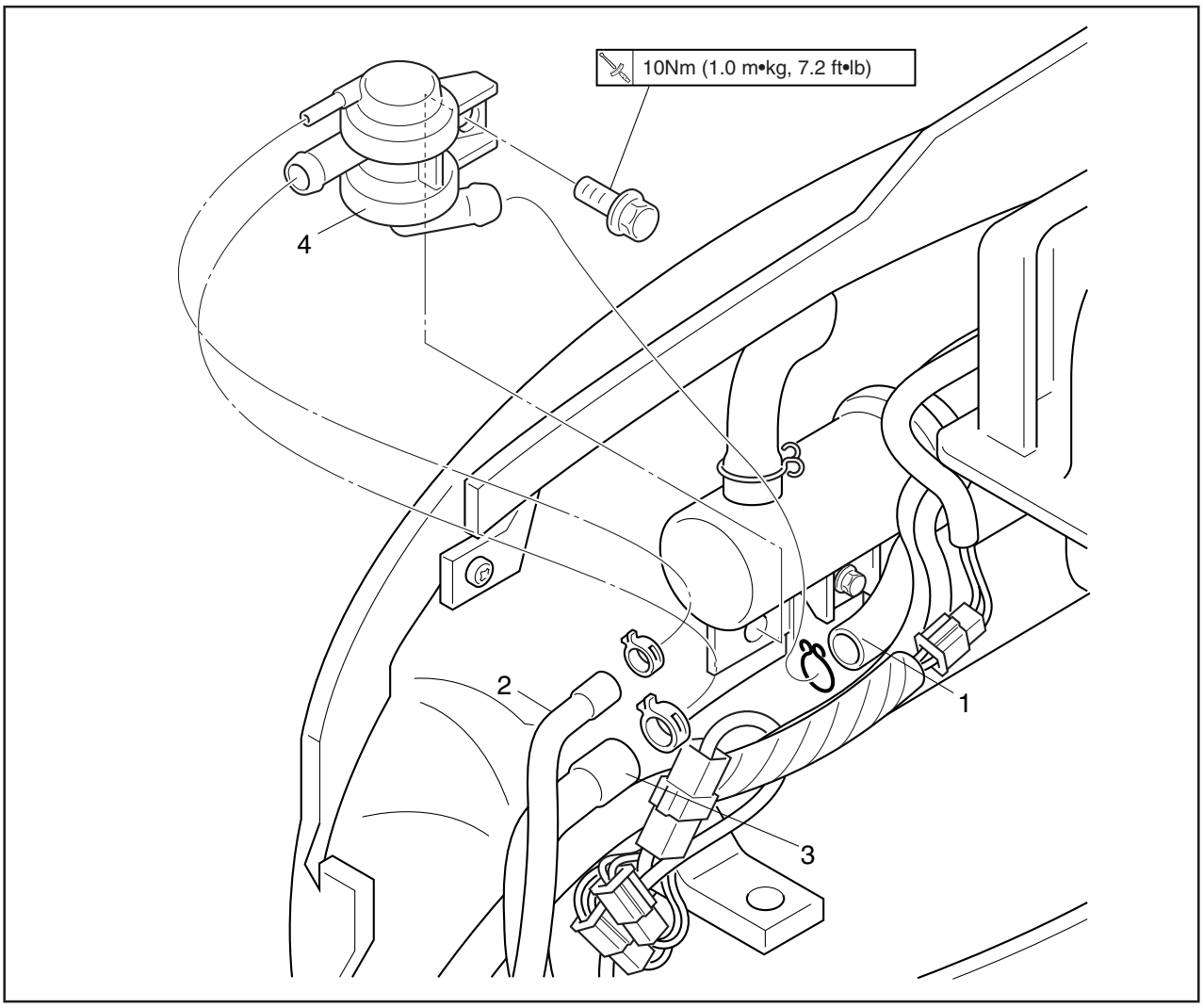
DC5V voltage positive lead →blue ③ DC5V voltage negative lead →black/blue②

throttle opens.	2.8~3.4V.
throttle closes.	0.625~0.775V

Out of specification → Replace the carburetor .

CAUTION:
Please do not make any adjustment on throttle position sensor.

AIR INDUCTION SYSTEM

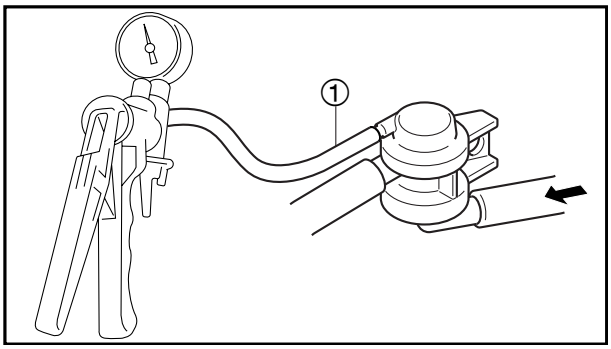


Order	Job/Part	Q'ty	Remarks
	Removing the air induction system Seat/Trunk		Remove the parts in the order listed. Refer to "COVER AND PANEL"in chapter 3.
1	Hose(from AI air filter)	1	
2	Vacuum hose(from mainfold)	1	
3	Hose(to cylinder head)	1	
4	Air cut-off valve assembly	1	
			For installation, reverse the removal procedure.

EAS00510

CHECKING THE AIR INDUCTION SYSTEM

1. Check:
 - hoses
 Loose connection → Connect properly.
 Cracks/damage → Replace.
 - pipe
 Cracks/damage → Replace.



2. Check:
 - air cut-off valve
 Cracks/damage → Replace.

NOTE:

When the negative pressure is applied to the part ①, check that the continuity in the direction of arrow mark is completely lost. If the negative pressure is not loaded, the continuity can be obtained.

CHAPTER 8
ELECTORICAL

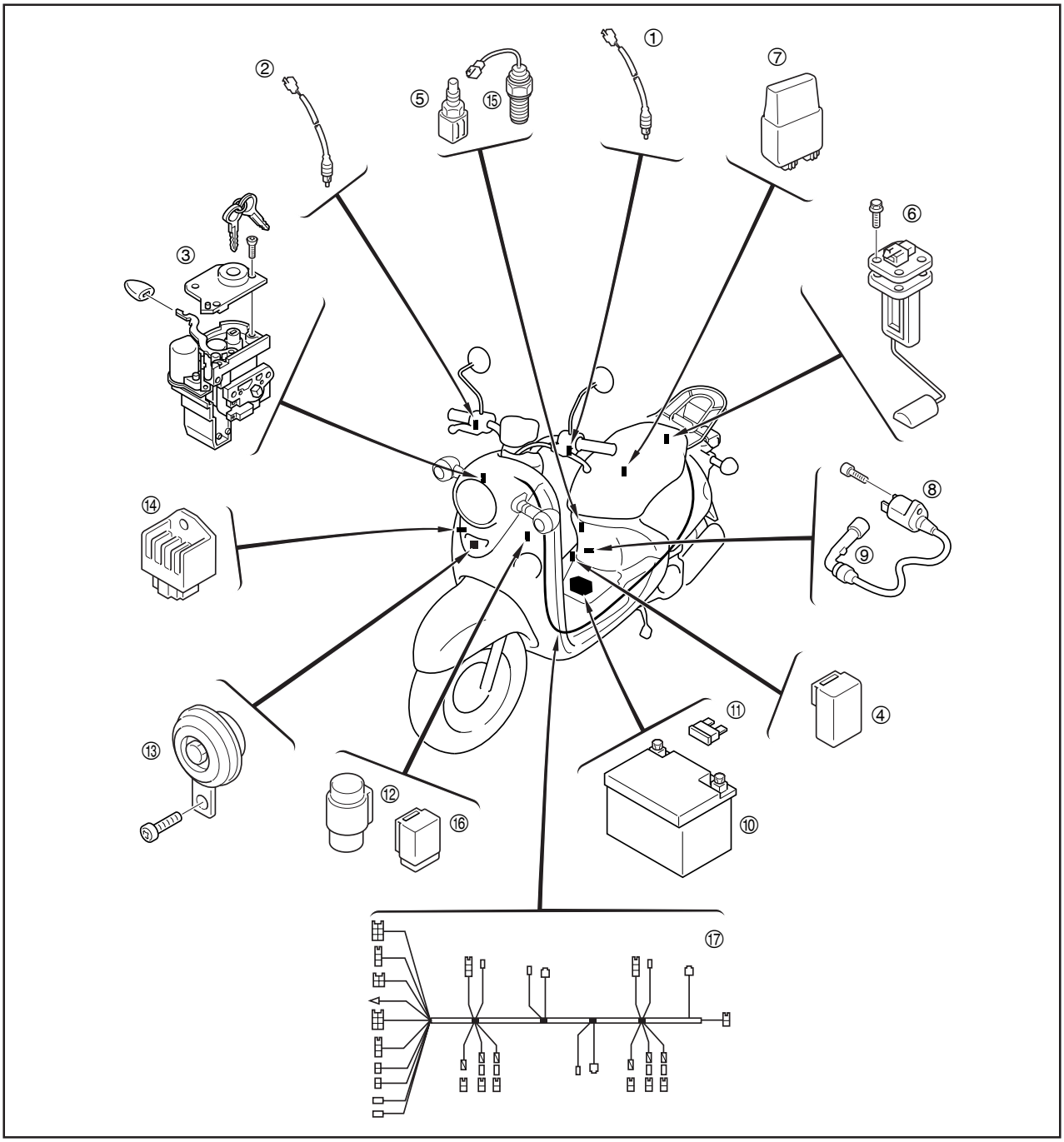
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CHECKING THE SWITCHES 8-5
CHECKING THE BULBS AND BULB SOCKETS 8-6
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EAS00729

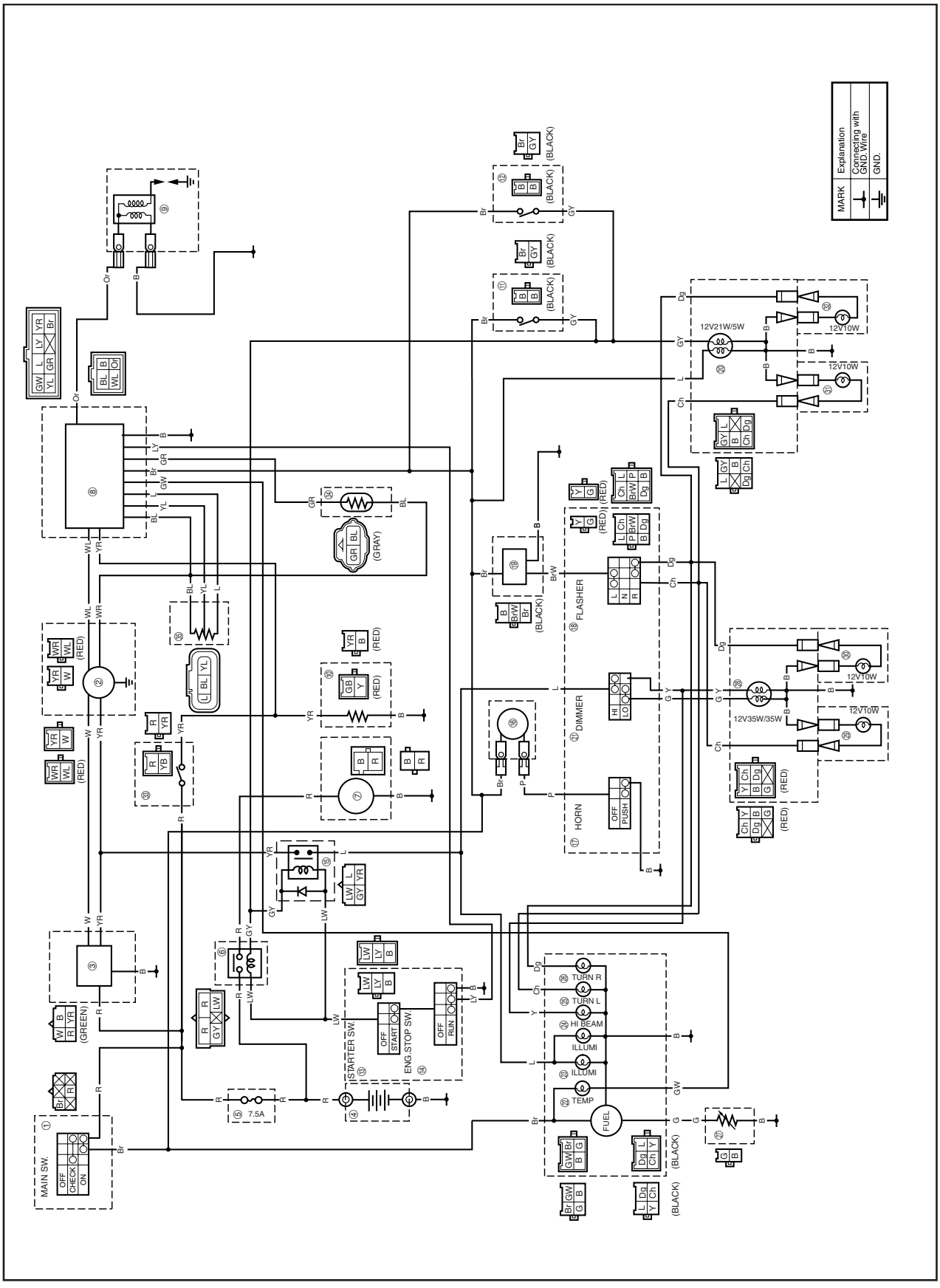
ELECTRICAL

ELECTRICAL COMPONENTS

① Rear brake light switch
② Front brake light switch
③ Main switch
④ Starter relay
⑤ Thermo unit
⑥ Fuel sender
⑦ C.D.I. unit
⑧ Ignition coil
⑨ Spark plug cap
⑩ Battery
⑪ Main fuse
⑫ Turn signal relay
⑬ Horn
⑭ Rectifier/Regulator
⑮ Thermo switch
⑯ Headlight relay
⑰ Wire harness



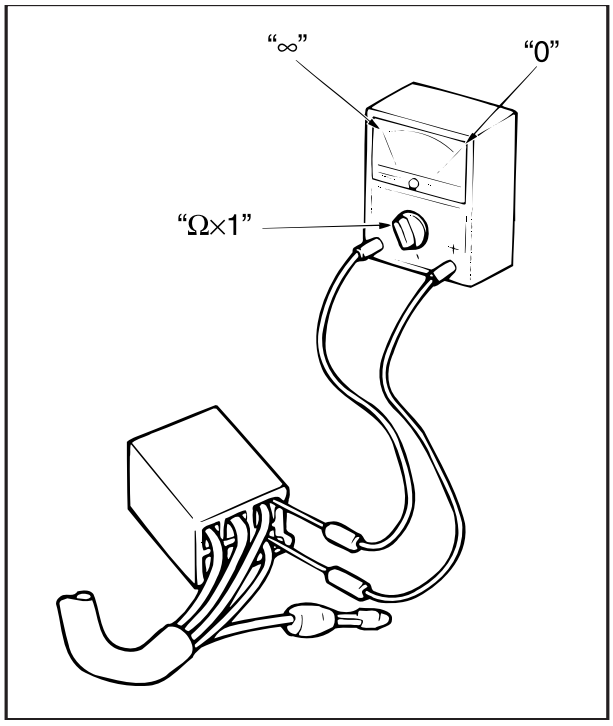
WIRING DIAGRAM

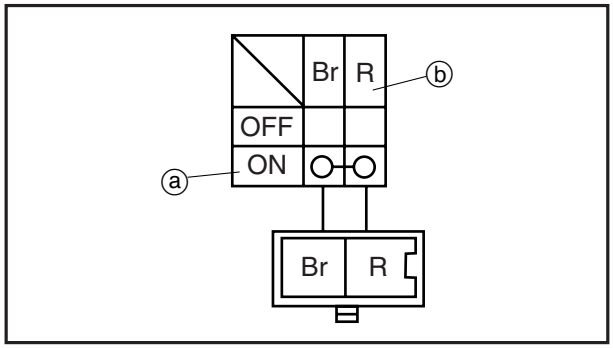


① Main switch
② AC magneto
③ Rectifier/Regulator
④ Battery
⑤ Main fuse
⑥ Starter relay
⑦ Starter motor
⑧ C.D.I. unit
⑨ Ignition coil
⑩ Auto choke unit
⑪ Front brake light switch
⑫ Rear brake light switch
⑬ Start switch
⑭ Engine stop switch
⑮ Headlight relay
⑯ Horn
⑰ Horn switch
⑱ Turn signal switch
⑲ Turn signal relay
⑳ Tail/brake light
㉑ Dimmer switch
㉒ Water temperature indicator light
㉓ Speedometer light
㉔ High beam indicator light
㉕ Turn signal indicator light(left)
㉖ Turn signal indicator light(right)
㉗ Fuel sender
㉘ Headlight
㉙ Front turn signal light(left)
㉚ Front turn signal light(right)
㉛ Rear turn signal light(left)
㉜ Rear turn signal light(right)
㉝ Thermo switch
㉞ Thermo unit
㉟ Throttle position sensor

Color Code

B	Black
G	Green
L	Blue
P	Pink
R	Red
W	White
Y	Yellow
Br	Brown
Ch	Chocolate
Dg	Dark green
Or	Orange
B/L	Black/Blue
G/B	Green/Black
G/R	Green/Red
G/Y	Green/Yellow
G/W	Green/White
L/W	Blue/White
L/Y	Blue/Yellow
W/L	White/Blue
W/R	White/Red
Y/B	Yellow/Black
Y/L	Yellow/Blue
Y/R	Yellow/Red
Br/W	Brown/White





EAS00730

CHECKING SWITCH CONTINUITY

Check each switch for continuity with the pocket tester. If the continuity reading is incorrect, check the wiring connections and if necessary, replace the switch.

CAUTION:

Never insert the tester probes into the coupler terminal slots. Always insert the probes from the opposite end of the coupler, taking care not to loosen or damage the leads.

Pocket tester
90890-03132 (YU-03112-C)

NOTE:

- Before checking for continuity, set the pocket tester to "0" and to the "Ω × 1" range.
- When checking for continuity, switch back and forth between the switch positions a few times.

The terminal connections for switches (e.g., main switch, engine stop switch) are shown in an illustration similar to the one on the left.
The switch positions ⓐ are shown in the far left column and the switch lead colors ⓑ are shown in the top row in the switch illustration.

NOTE:

"○-○" indicates a continuity of electricity between switch terminals (i.e., a closed circuit at the respective switch position).

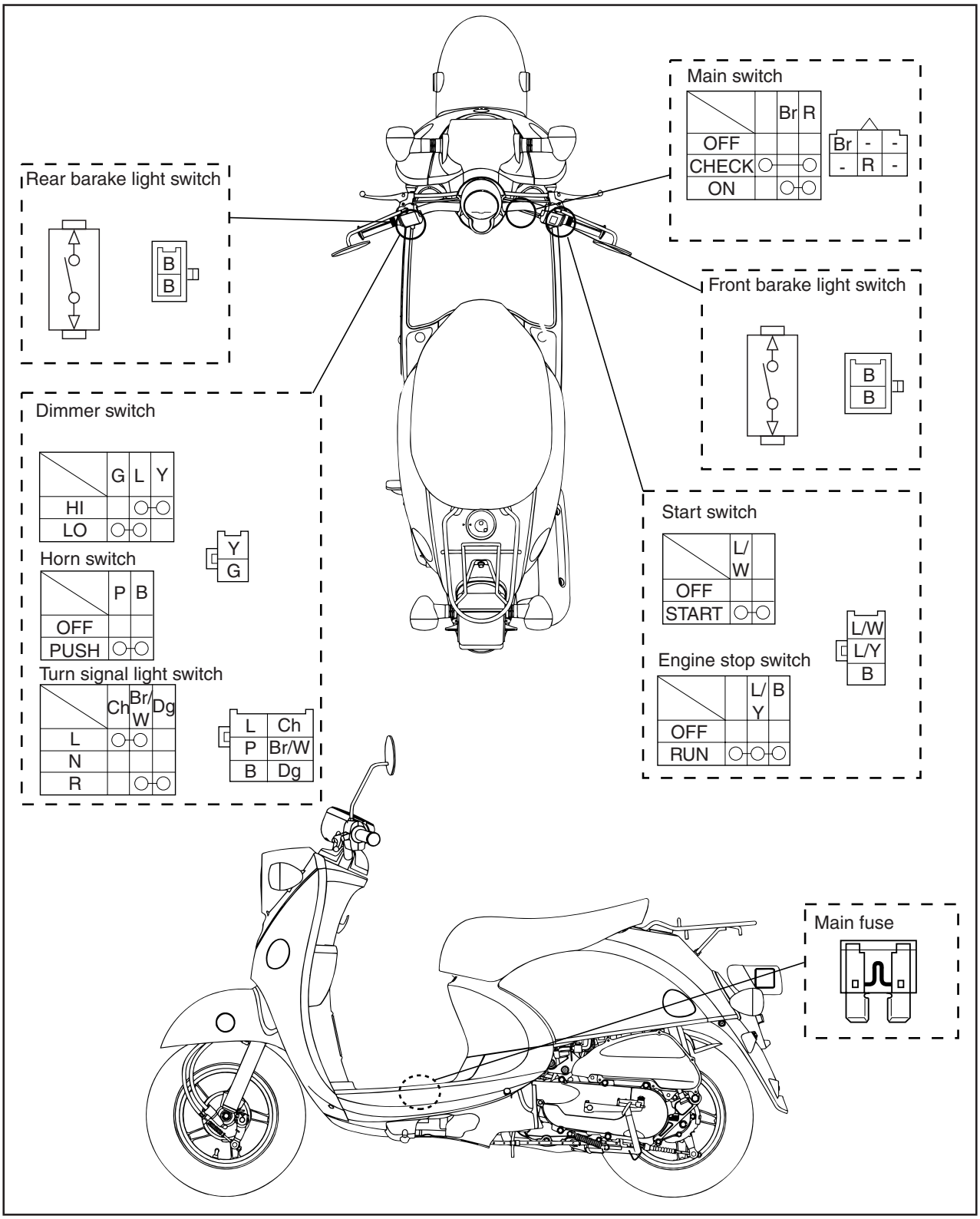
The example illustration on the left shows that:
There is continuity between black and black/white when the switch is set to "OFF".
There is continuity between red and brown when the switch is set to "ON".

EAS00731

CHECKING THE SWITCHES

Check each switch for damage or wear, proper connections, and also for continuity between the terminals. Refer to “CHECKING SWITCH CONTINUITY”.

Damage/wear → Repair or replace.
Improperly connected → Properly connect.
Incorrect continuity reading → Replace the switch.



EAS00733

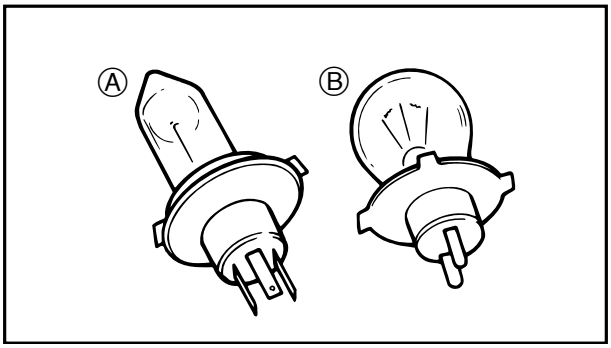
CHECKING THE BULBS AND BULB SOCKETS

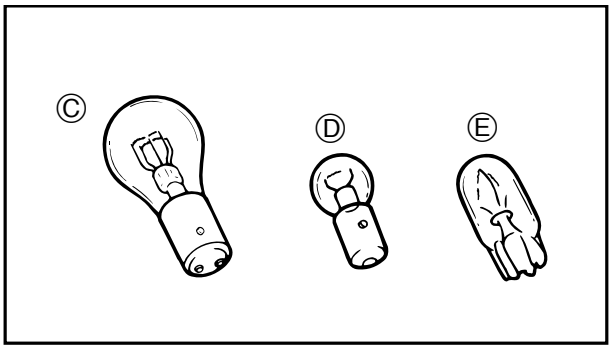
Check each bulb and bulb socket for damage or wear, proper connections, and also for continuity between the terminals.

Damage/wear → Repair or replace the bulb, bulb socket or both.

Improperly connected → Properly connect.

No continuity → Repair or replace the bulb, bulb socket or both.





TYPES OF BULBS

The bulbs used on this scooter are shown in the illustration on the left.

- Bulbs Ⓐ and Ⓑ are used for the headlights and usually use a bulb holder that must be detached before removing the bulb. The majority of these types of bulbs can be removed from their respective socket by turning them counterclockwise.
- Bulbs Ⓒ is used for turn signal and tail/brake lights and can be removed from the socket by pushing and turning the bulb counterclockwise.
- Bulbs Ⓓ and Ⓔ are used for meter and indicator lights and can be removed from their respective socket by carefully pulling them out.

CHECKING THE CONDITION OF THE BULBS

The following procedure applies to all of the bulbs.

1. Remove:
 - bulb

⚠WARNING

Since the headlight bulb gets extremely hot, keep flammable products and your hands away from the bulb until it has cooled down.

CAUTION:

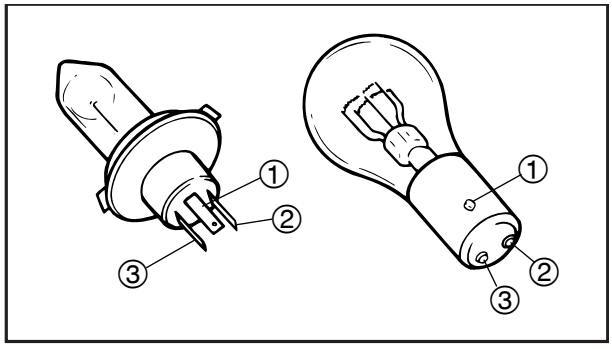
- **Be sure to hold the socket firmly when removing the bulb. Never pull the lead, otherwise it may be pulled out of the terminal in the coupler.**
- **Avoid touching the glass part of the headlight bulb to keep it free from oil, otherwise the transparency of the glass, the life of the bulb, and the luminous flux will be adversely affected. If the headlight bulb gets soiled, thoroughly clean it with a cloth moistened with alcohol or lacquer thinner.**

2. Check:
 - bulb (for continuity)
 (with the pocket tester)
 No continuity → Replace.

Pocket tester
90890-03132 (YU-03112-C)

NOTE:

Before checking for continuity, set the pocket tester to "0" and to the "Ω × 1" range.

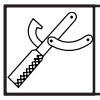


a. Connect the positive tester probe to terminal ① and the negative tester probe to terminal ②, and check the continuity.
b. Connect the positive tester probe to terminal ① and the negative tester probe to terminal ③, and check the continuity.
c. If either of the readings indicate no continuity, replace the bulb.

CHECKING THE CONDITION OF THE BULB SOCKETS

The following procedure applies to all of the bulb sockets.

1. Check:
 - bulb socket (for continuity)
 (with the pocket tester)
 No continuity → Replace.



Pocket tester
90890-03132 (YU-03112-C)

NOTE:

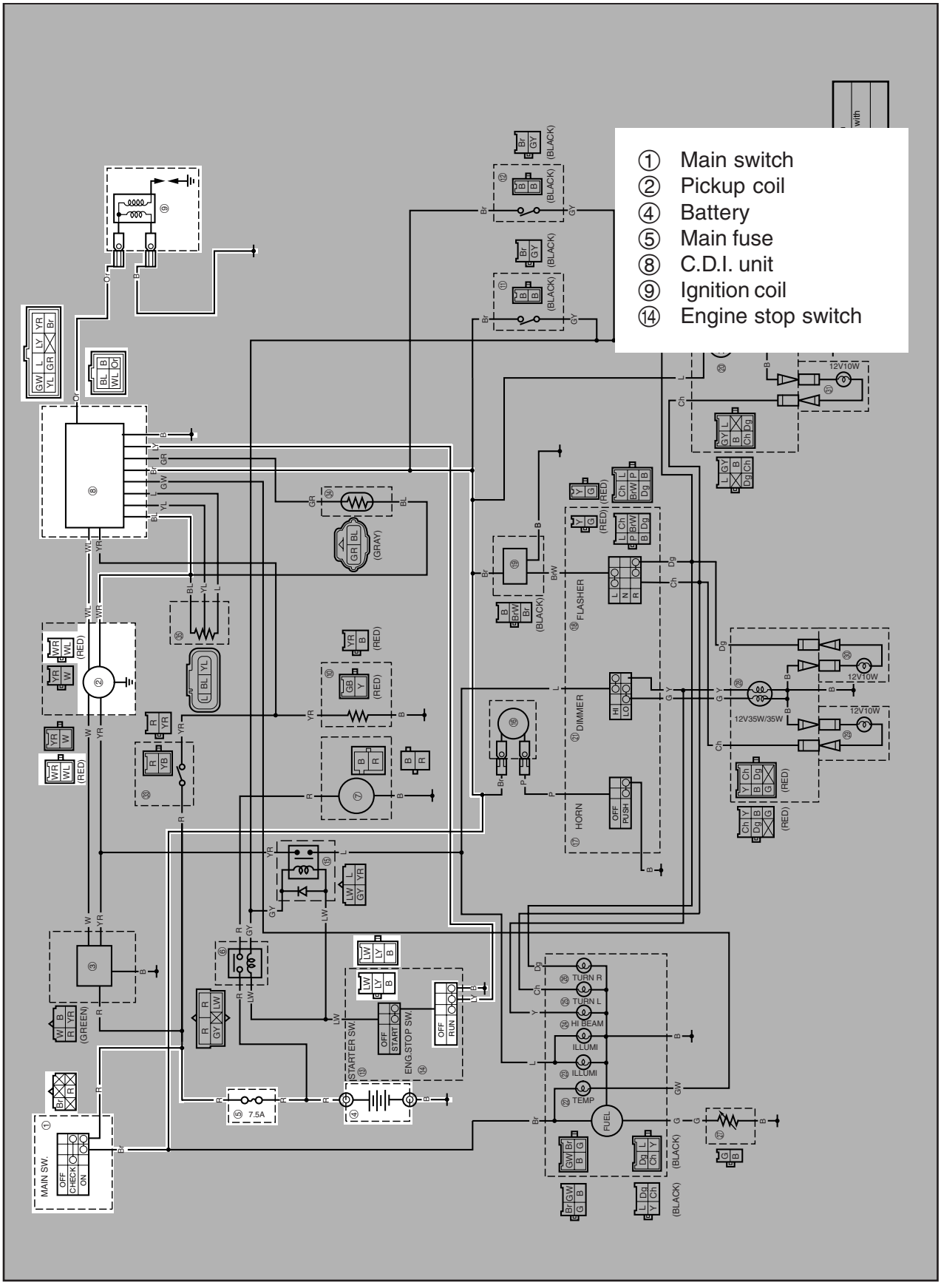
Check each bulb socket for continuity in the same manner as described in the bulb section; however, note the following.

a. Install a good bulb into the bulb socket.
b. Connect the pocket tester probes to the respective leads of the bulb socket.
c. Check the bulb socket for continuity. If any of the readings indicate no continuity, replace the bulb socket.

EAS00734

IGNITION SYSTEM

CIRCUIT DIAGRAM



EAS00736
TROUBLESHOOTING

The ignition system fails to operate (no spark or intermittent spark).

Check:
1. main fuse
2. battery
3. spark plug
4. ignition spark gap
5. spark plug cap resistance
6. ignition coil resistance
7. pickup coil resistance
8. main switch
9. engine stop switch
10. wiring connections (of the entire ignition system)

NOTE:
- Before troubleshooting, remove the following part(s):

1. Battery cover/Battery holder
2. Head light cover
3. Leg shield 1
4. Seat/Trunk

- Troubleshoot with the following special tool(s).



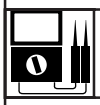
Ignition checker
90890-06754
YM-34487
Pocket tester
90890-03132
YU-03112-C

EAS00738
1. Main Fuse
- Check the fuse for continuity. Refer to "CHECKING THE FUSE" in chapter 3.
- Is the fuse OK?

YES → NO

Replace the fuse.

EAS00739
2. Battery
- Check the condition of the battery. Refer to "CHECKING AND CHARGING THE BATTERY" in chapter 3.



Minimum open-circuit voltage
12.8 V or more at 20°C

- Is the battery OK?

YES → NO

- Clean the battery terminals.
- Recharge or replace the battery.

EAS00740
3. Spark plug
- Check the condition of the spark plug.
- Check the spark plug type.
- Measure the spark plug gap. Refer to "CHECKING THE SPARK PLUG" in chapter 3.



Standard spark plug
CR7E (NGK)
Spark plug gap
0.7 ~ 0.8 mm(0.028 ~ 0.032 in)

- Is the spark plug in good condition, is it of the correct type, and is its gap within specification?

YES → NO

Re-gap or replace the spark plug.

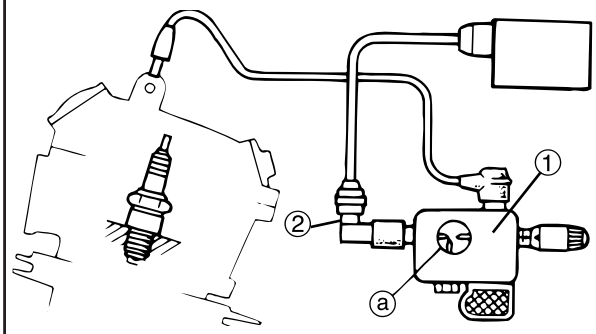
EAS00742

4. Ignition spark gap

- Disconnect the spark plug cap from the spark plug.
- Connect the ignition checker ① as shown.

② Spark plug cap

- Set the main switch to "ON".
- Measure the ignition spark gap ⓐ.
- Crank the engine by pushing the starter switch and gradually increase the spark gap until a misfire occurs.



Minimum ignition spark gap
6 mm(0.24 in)

- Is there a spark and is the spark gap within specification?

NO

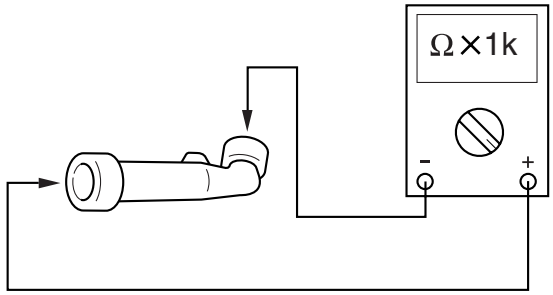
YES

The ignition system is OK.

EAS00744

5. Spark plug cap resistance

- Remove the spark plug cap from the spark plug lead.
- Connect the pocket tester ("Ω × 1k" range) to the spark plug cap as shown.
- Measure the spark plug cap resistance.



Spark plug cap resistance
4~6 kΩ at 20°C

- Is the spark plug cap OK?

YES

NO

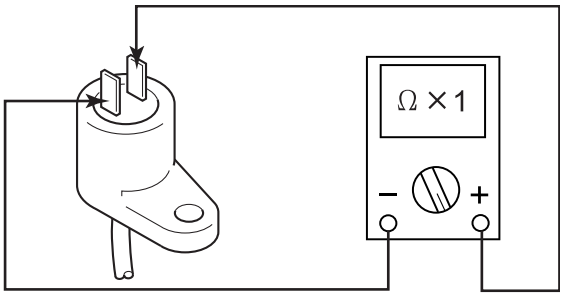
Replace the spark plug cap.

EAS00746

6. Ignition coil resistance

- Disconnect the ignition coil connectors from the ignition coil terminals.
- Connect the pocket tester (Ω × 1) to the ignition coil as shown.

Positive tester probe → orange
Negative tester probe → black

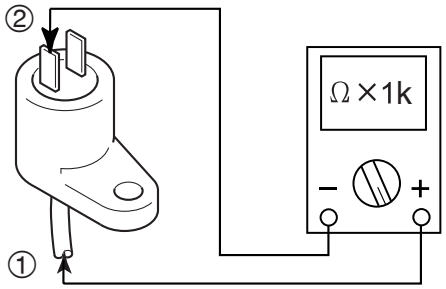


● Measure the primary coil resistance.

Primary coil resistance
0.168 ~ 0.252 Ω at 20°C

● Connect the pocket tester (Ω × 1k) to the ignition coil as shown.

Negative tester probe → spark plug lead ②
Positive tester probe → spark plug lead ①



● Measure the secondary coil resistance.

Secondary coil resistance
2.4 ~ 3.6 kΩ at 20°C

● Is the ignition coil OK?

YES NO

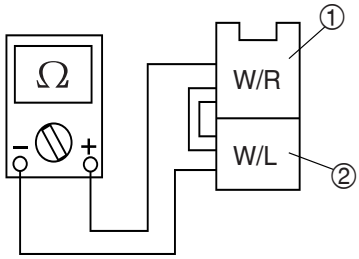
Replace the ignition coil.

EAS00748

7. Pickup coil resistance

● Disconnect the pickup coil coupler from the wire harness.
● Connect the pocket tester (Ω × 100) to the pickup coil terminal as shown.

Positive tester probe → white/red ①
Negative tester probe → white/blue②



● Measure the pickup coil resistance.

Pickup coil resistance
248 ~ 372Ω at 20°C
(between white/red and white/blue)

● Is the pickup coil OK?

YES NO

Replace the pickup coil.

EAS00749

8. Main switch

● Check the main switch for continuity. Refer to "CHECKING THE SWITCHES".
● Is the main switch OK?

YES NO

Replace the main switch.

EAS00750

9. Engine stop switch
- Check the engine stop switch for continuity.
 Refer to “CHECKING THE SWITCHES”.
- Is the engine stop switch OK?

YES ⇩

NO ⇩

Replace the right handlebar switch.

EAS00754

10. Wiring
- Check the entire ignition system’s wiring.
 Refer to “CIRCUIT DIAGRAM”.
- Is the ignition system’s wiring properly connected and without defects?

YES ⇩

NO ⇩

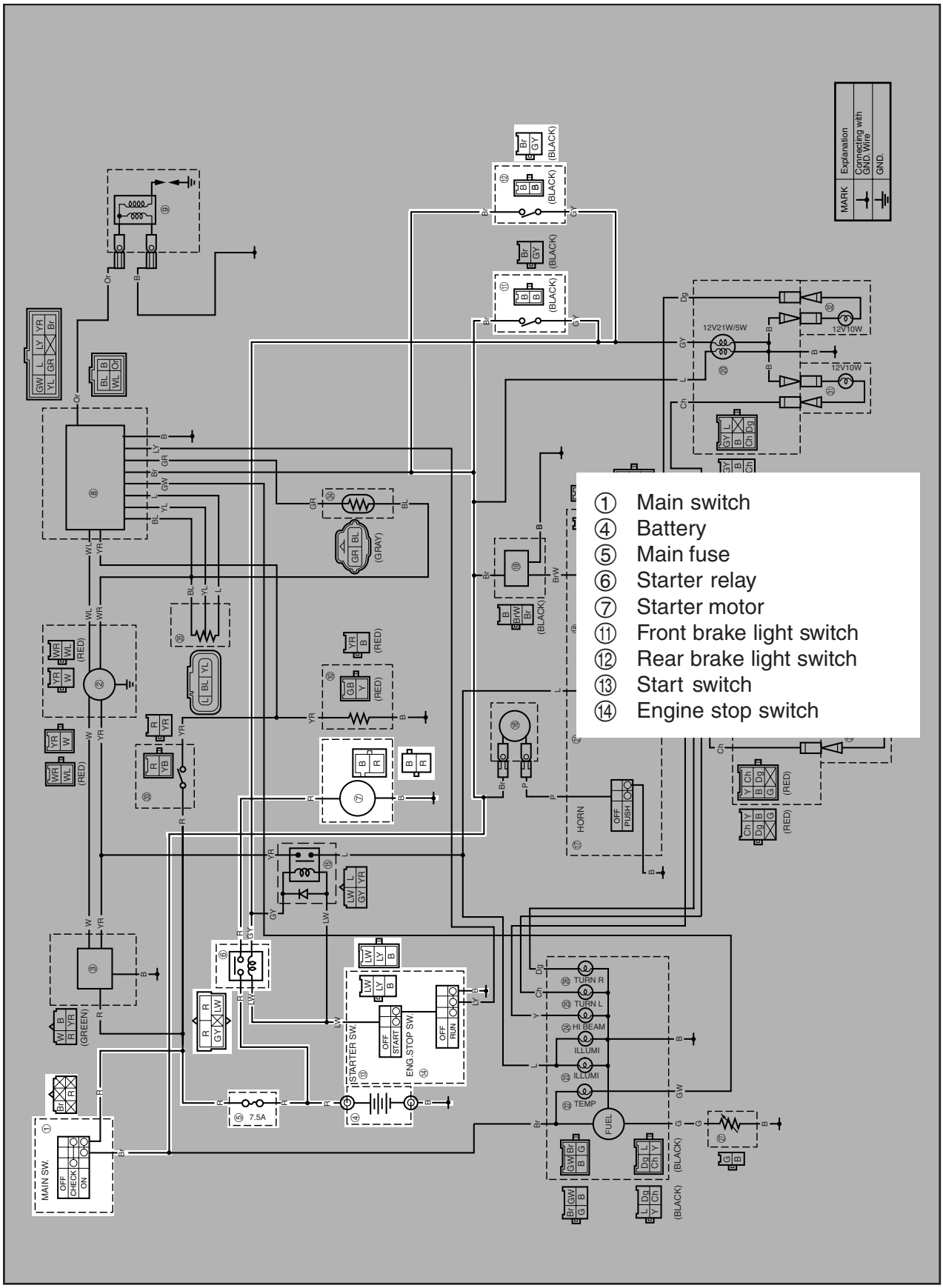
Replace the C.D.I. unit.

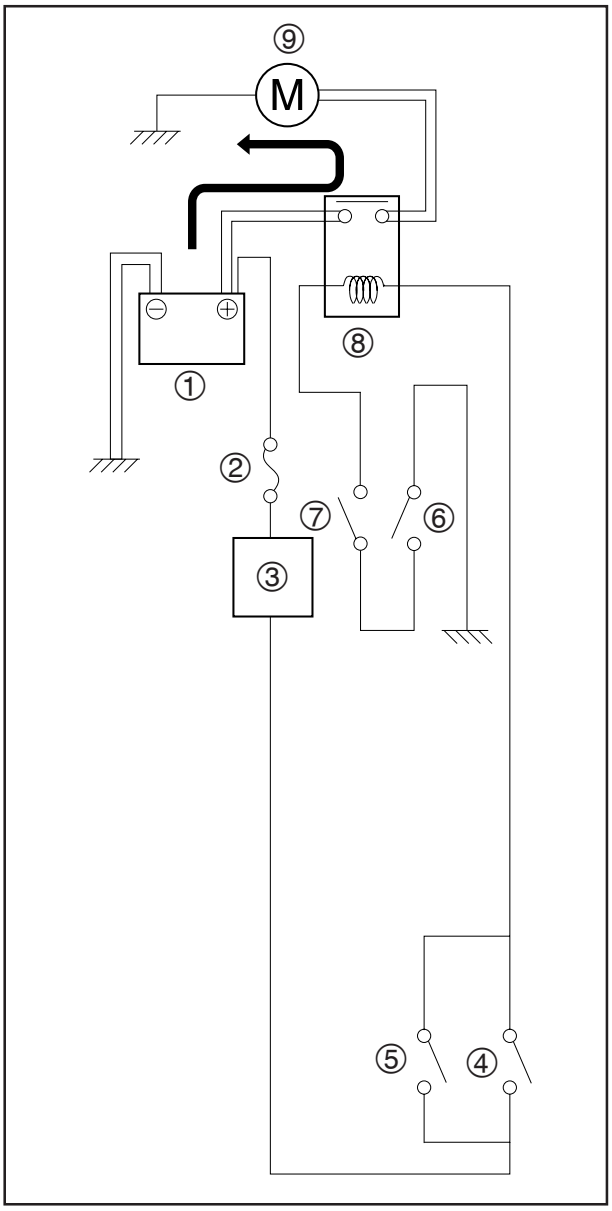
Properly connect or repair the ignition system’s wiring.

EAS00755

ELECTRIC STARTING SYSTEM

CIRCUIT DIAGRAM





EAS00756

STARTING CIRCUIT CUT-OFF SYSTEM OPERATION

If the main switch is set to “ON” (switch is closed), the starter motor can only operate if at least one of the following conditions is met:

- The brake lever (front or rear) is pulled to the handlebar (the brake light switch is closed).

① Battery
② Main fuse
③ Main switch
④ Front brake light switch
⑤ Rear brake light switch
⑥ Engine stop switch
⑦ Start switch
⑧ Starter relay
⑨ Starter motor

EAS00757
TROUBLESHOOTING

The starter motor fails to turn.

Check:
1. mainfuse
2. battery
3. starter motor
4 starter relay
5 main switch
6 brake light switch (front, rear)
7 engine stop switch
8 start switch
9 wiring connections
(of the entire starting system)

NOTE:
- Before troubleshooting, remove the following part(s):

1. Seat/Trunk/Rear carrier
2. Mat/Front cover
3. Side cover(left and right)/Rear cover
4. Battery cover/Battery holder
5. Footrest board side cover mole(right,left)
6. Footrest board
7. Head light cover/Leg shield 1
8. Air filter assembly

- Troubleshoot with the following special tool(s).



Pocket tester
90890-03132 (YU-03112-C)

EAS00738

1. Main fuse

- Check the fuse for continuity.
 Refer to “CHECKING THE FUSE” in chapter 3.
- Is the fuse OK?

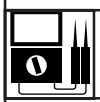
YES ⇩ NO ⇩

Replace the fuse.

EAS00739

2. Battery

- Check the condition of the battery.
 Refer to “CHECKING AND CHARGING THE BATTERY” in chapter 3.



Minimum open-circuit voltage
12.8 V or more at 20°C

- Is the battery OK?

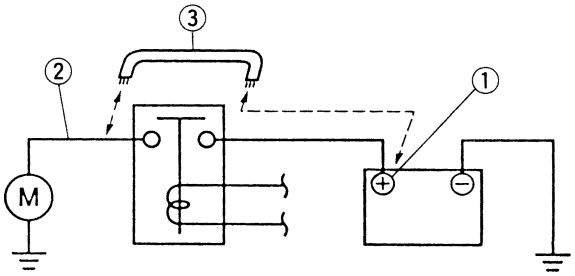
YES ⇩ NO ⇩

- Clean the battery terminals.
- Recharge or replace the battery.

EAS00758

3. Starter motor

- Connect the positive battery terminal ① and starter motor lead ② with a jumper lead③.



⚠WARNING

- **A wire that is used as a jumper lead must have at least the same capacity or more as that of the battery lead, otherwise the jumper lead may burn.**
- **This check is likely to produce sparks, therefore make sure nothing flammable is in the vicinity.**

- Does the starter motor turn?

YES ⇩

NO ⇩

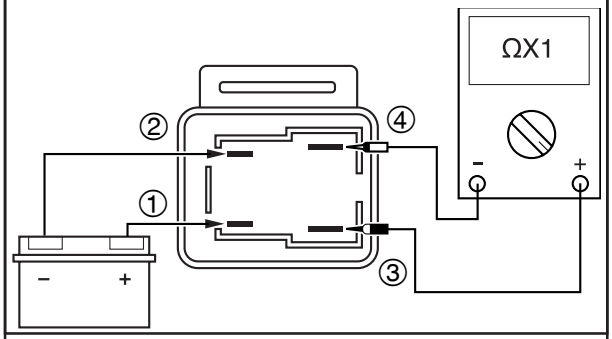
Repair or replace the starter motor.

EAS00761

4. Starter relay

- Disconnect the starter relay coupler from the coupler.
- Connect the pocket tester (Ω × 1) and battery (12 V) to the starter relay coupler as shown.

Positive battery terminal → green/yellow ①
Negative battery terminal → blue/white ②
Positive tester probe → red ③
Negative tester probe →red ④



- Does the starter relay have continuity between red③ and red ④?

YES ⇩

NO ⇩

Replace the starter relay.

EAS00749

5. Main switch

- Check the main switch for continuity. Refer to “CHECKING THE SWITCHES”.
- Is the main switch OK?

YES ⇩

NO ⇩

Replace the main switch.

EAS00751

6. Brake light switch(front and rear)
- Check the brake light switch for continuity.
 Refer to “CHECKING THE SWITCHES”.
- Is the brake light switch OK?

YES

NO → Replace the brake light switch.

EAS00750

7. Engine stop switch
- Check the engine stop switch for continuity.
 Refer to “CHECKING THE SWITCHES”.
- Is the engine stop switch OK?

YES

NO → Replace the right handlebar switch.

EAS00764

8. Start switch
- Check the start switch for continuity.
 Refer to “CHECKING THE SWITCHES”.
- Is the start switch OK?

YES

NO → Replace the right handlebar switch.

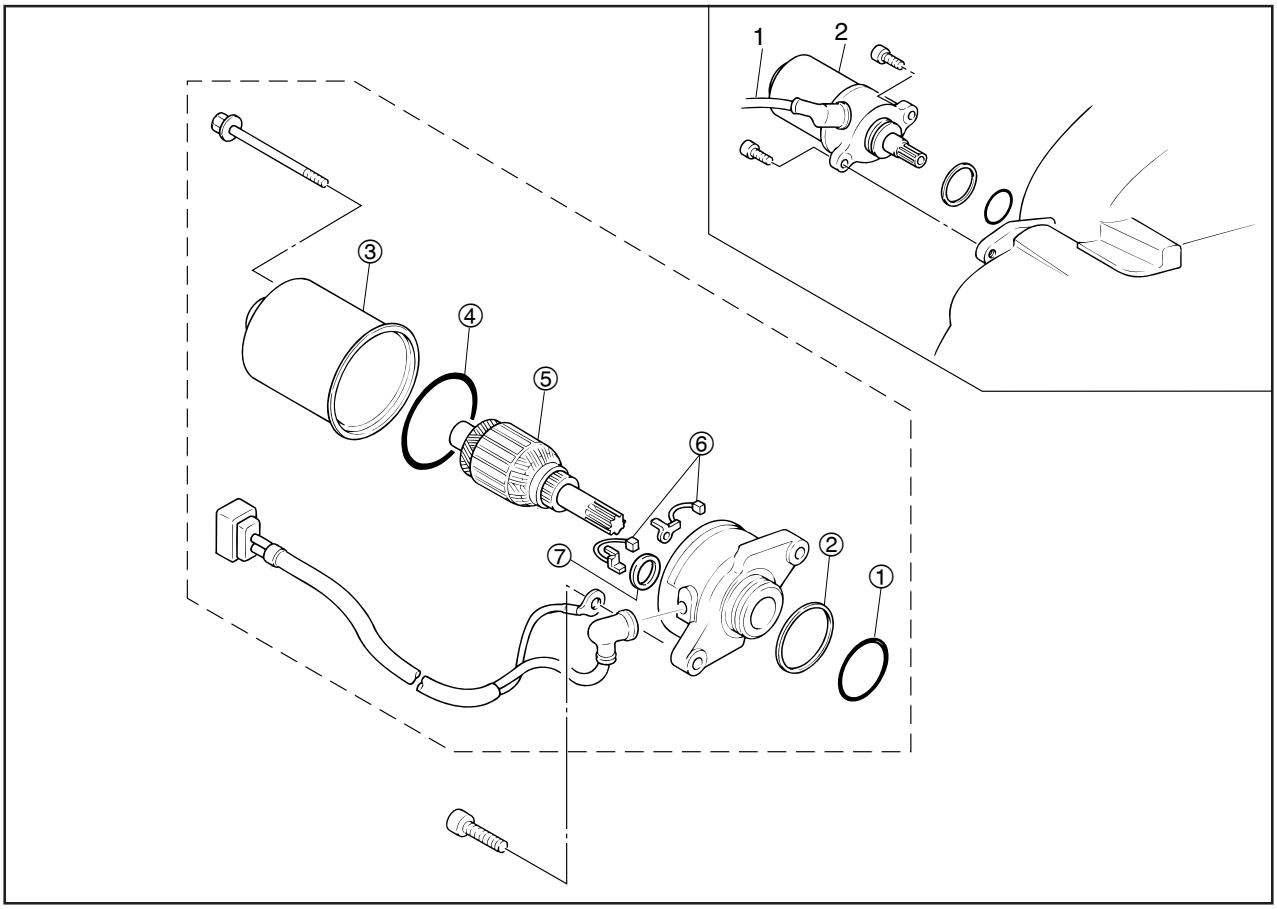
EAS00766

9. Wiring
- Check the entire starting system’s wiring.
 Refer to “CIRCUIT DIAGRAM”.
- Is the starting system’s wiring properly connected and without defects?

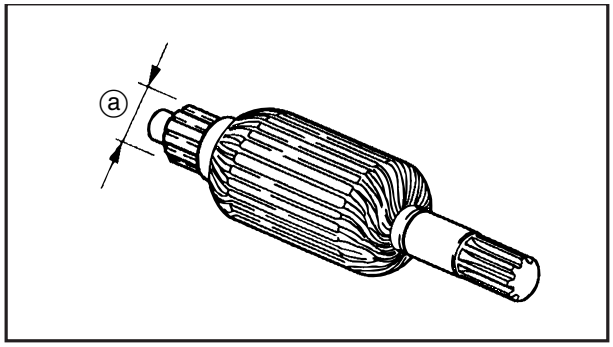
YES → The starting system circuit is OK.

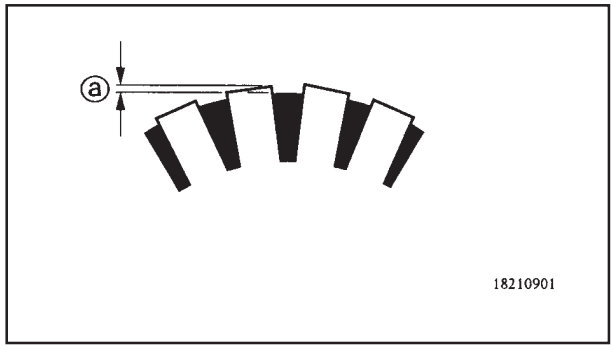
NO → Properly connect or repair the starting system’s wiring.

EAS00767
STARTER MOTOR



Order	Job/Part	Q'ty	Remarks
	Removing the starter motor		Remove the parts in the order listed.
	Seat/Trunk Front cover Battery cover		Refer to "COVER AND PANEL"in chapter 3.
	Air filter assembly		Refer to"MANIFOLD, AIR FILTER AND MUFFLER ASSEMBLY"in chapter 5.
1	Starter motor lead	1	Disconnect.
2	Starter motor	1	For installation, reverse the removal procedure.
	Disassembling the starter motor		Disassemble the parts in the order listed.
①	O-ring	1	
②	Gasket	1	
③	Stator assembly	1	
④	O-ring	1	
⑤	Armature coil	1	
⑥	Brush	2	
⑦	Plate washer	1	For assembly, reverse the disassembly procedure.





EAS00769
CHECKING THE STARTER MOTOR

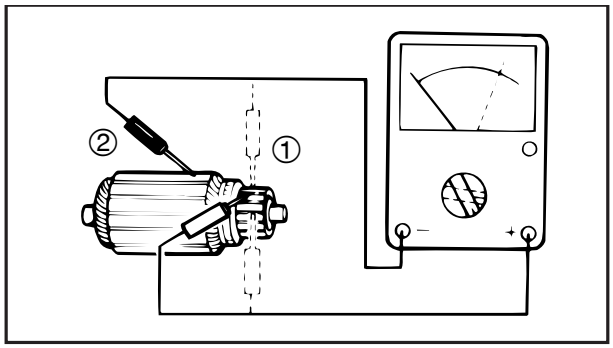
1. Check:
 - commutator
 Dirt → Clean with 600-grit sandpaper.
2. Measure:
 - commutator diameter ⓐ
 Out of specification → Replace the starter motor.

Commutator wear limit
16.6 mm (0.654 in)

3. Measure:
 - mica undercut ⓐ
 Out of specification → Scrape the mica to the proper measurement with a hacksaw blade that has been grounded to fit the commutator.

Mica undercut
1.35 mm (0.053 in)

NOTE:
The mica of the commutator must be undercut to ensure proper operation of the commutator.



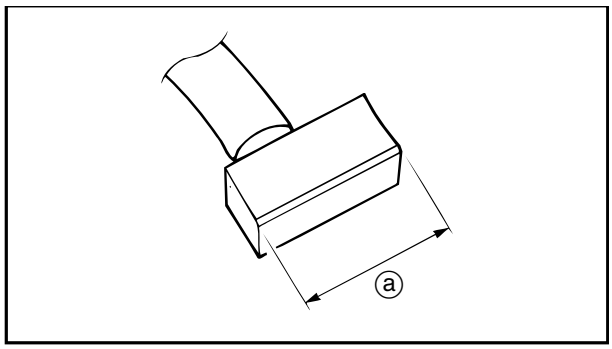
4. Measure:
 - armature assembly resistances (commutator and insulation)
 Out of specification → Replace the starter motor.

a. Measure the armature assembly resistances with the pocket tester.

Pocket tester
90890-03132 (YU-03112-C)

Armature coil
Commutator resistance ①
0.0378 ~ 0.0462 Ω at 20°C
Insulation resistance ②
Above 1 MΩ at 20°C

b. If any resistance is out of specification, replace the starter motor.

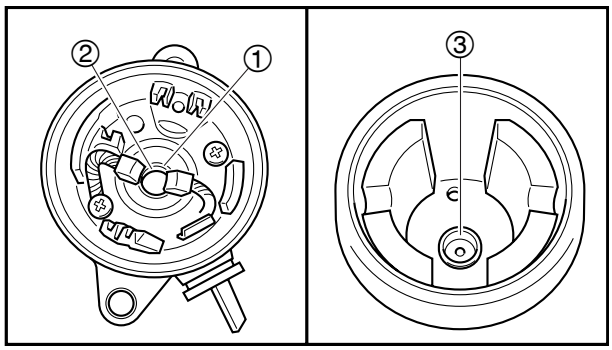


5. Measure:
 - brush length ⓐ
 Out of specification → Replace the brushes as a set.

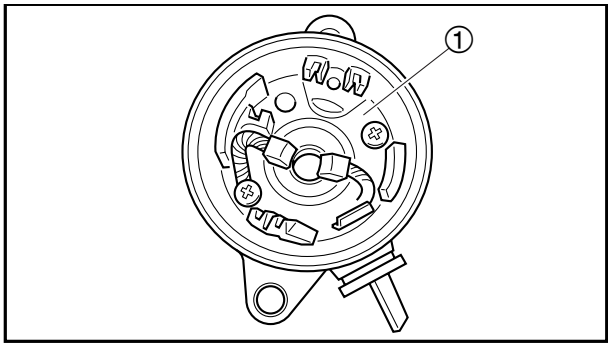
Brush length wear limit
3.5 mm (0.14 in)

6. Measure:
 - brush spring force
 Out of specification → Replace the brush springs as a set.

Brush spring force
3.92 ~ 5.88 N



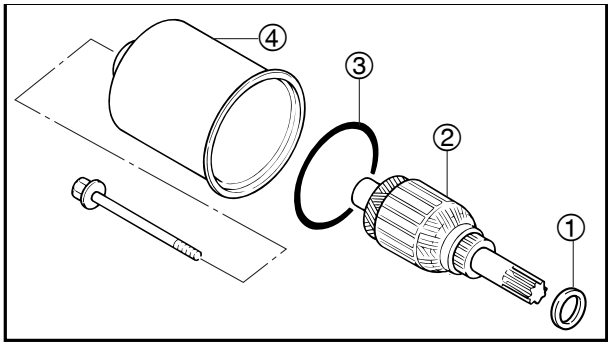
7. Check:
 - gear teeth
 Damage/wear → Replace the gear.
8. Check:
 - bearing①
 - oil seal②
 - bush③
 Damage/wear → Replace.



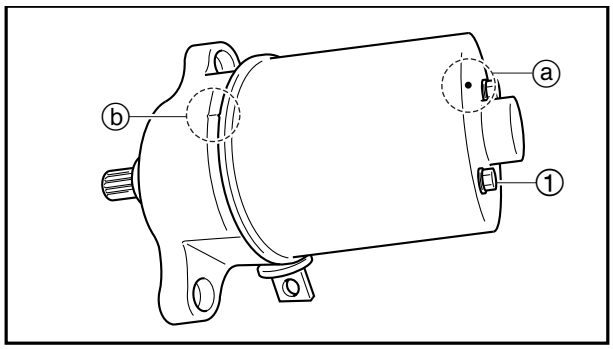
EAS00772

ASSEMBLING THE STARTER MOTOR

1. Install:
 - brush seat ①



2. Install:
 - washer①
 - armature coil ②
 - o-ing New③
 - stator assembly④



3 . Install:
 - bolts ①

	5 Nm (0.5 m • kg, 3.6 ft • lb)

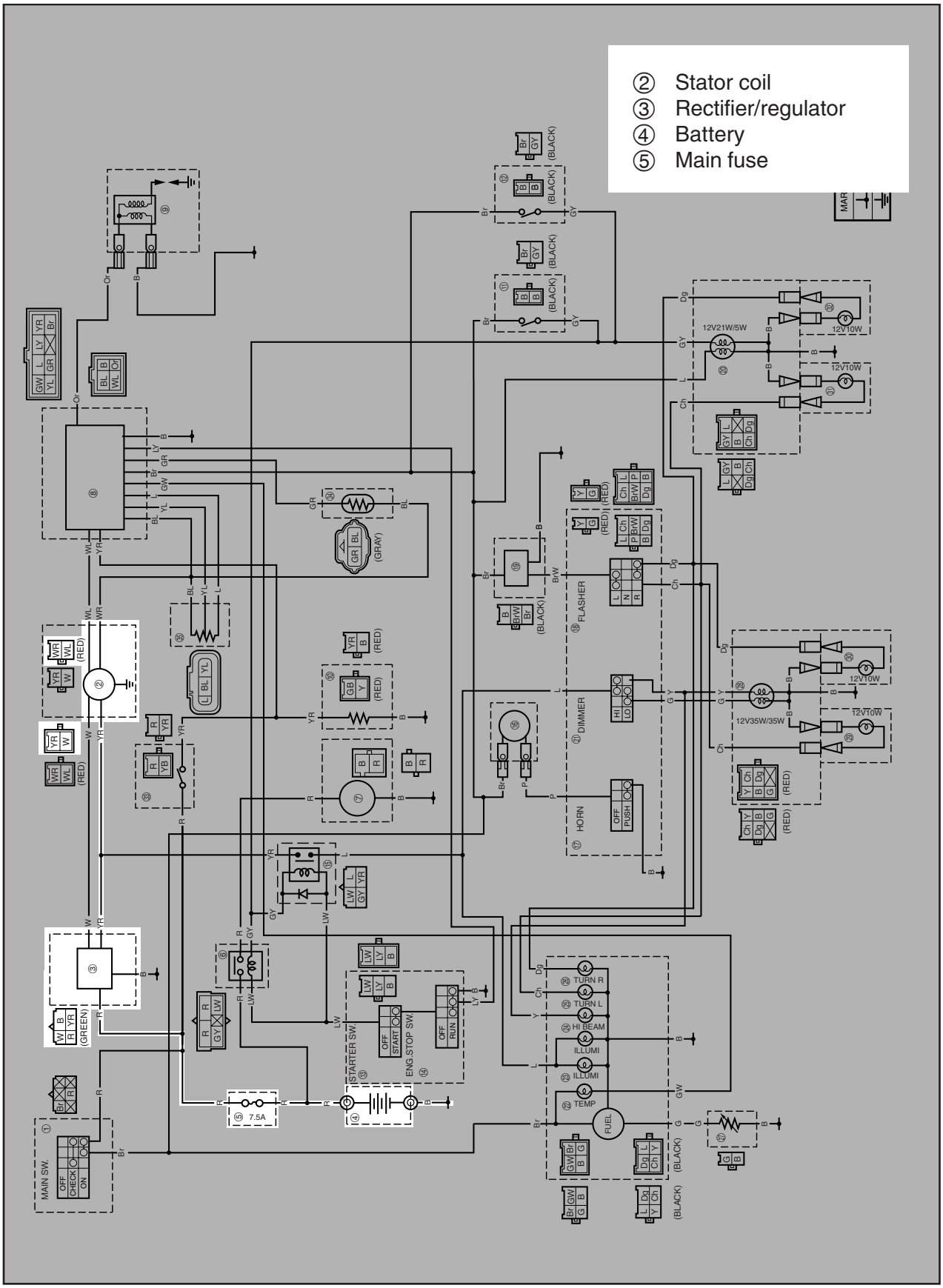
NOTE:

Align the match marks ⓐ on the starter motor yoke with the match marks ⓑ on the front and starter motor rear covers.

EAS00773

CHARGING SYSTEM

CIRCUIT DIAGRAM



EAS00774
TROUBLESHOOTING

The battery is not being charged.

Check:
1. main fuse
2. battery
3. charging voltage
4. stator coil resistance
5. wiring connections
 (of the entire charging system)

NOTE:
- Before troubleshooting, remove the following part(s):

1. Seat/Trunk
2. Battery cover
3. Head light cover
4. Leg shield 1
 - Troubleshoot with the following special tool(s).

Engine tachometer
90890-03113 (YU-08036-C)
Pocket tester
90890-03132 (YU-03112-C)

EAS00738
1. Main fuse
- Check the fuse for continuity.
 Refer to "CHECKING THE FUSE" in chapter 3.
- Is the fuse OK?

YES ⇩ NO ⇩

Replace the fuse.

EAS00739
2. Battery
- Check the condition of the battery.
 Refer to "CHECKING AND CHARGING THE BATTERY" in chapter 3.

Minimum open-circuit voltage
12.8 V or more at 20°C

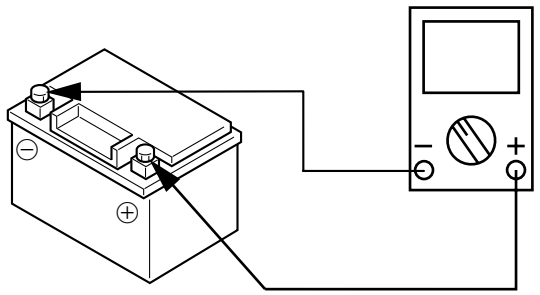
- Is the battery OK?

YES ⇩ NO ⇩

- Clean the battery terminals.
- Recharge or replace the battery.

EAS00775
3. Charging voltage
- Connect the engine tachometer to the spark plug lead of cylinder.
- Connect the pocket tester (DC 20 V) to the battery as shown.

Positive tester probe → positive battery terminal
Negative tester probe → negative battery terminal



- Start the engine and let it run at approximately 5,000 r/min.
- Measure the charging voltage.

Charging voltage
14 V at 5000r/min

NOTE:
Make sure the battery is fully charged.

- Is the charging voltage within specification?

NO ⇩ YES ⇩

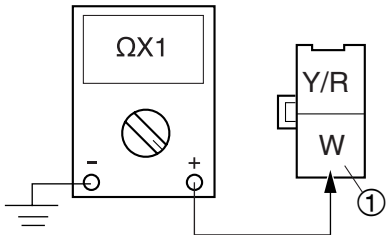
The charging circuit is OK.

EAS00776

4. Stator coil resistance

- Remove the starter coil couplers from wireharness.
- Connect the pocket tester (Ω × 1) to the stator coils as shown.

Positive tester probe →white ①
Negative tester probe → ground ②



- Measure the stator coil resistances.

Stator coil resistance
0.288 ~ 0.432 Ω at 20°C
(between white and ground)

- Is the stator coil OK?

YES ⇩ NO ⇩

Replace the stator coil assembly.

EAS00754

5. Wiring

- Check the entire charging system's wiring.
 Refer to "CIRCUIT DIAGRAM".
- Is the charging system's wiring properly connected and without defects?

YES ⇩ NO ⇩

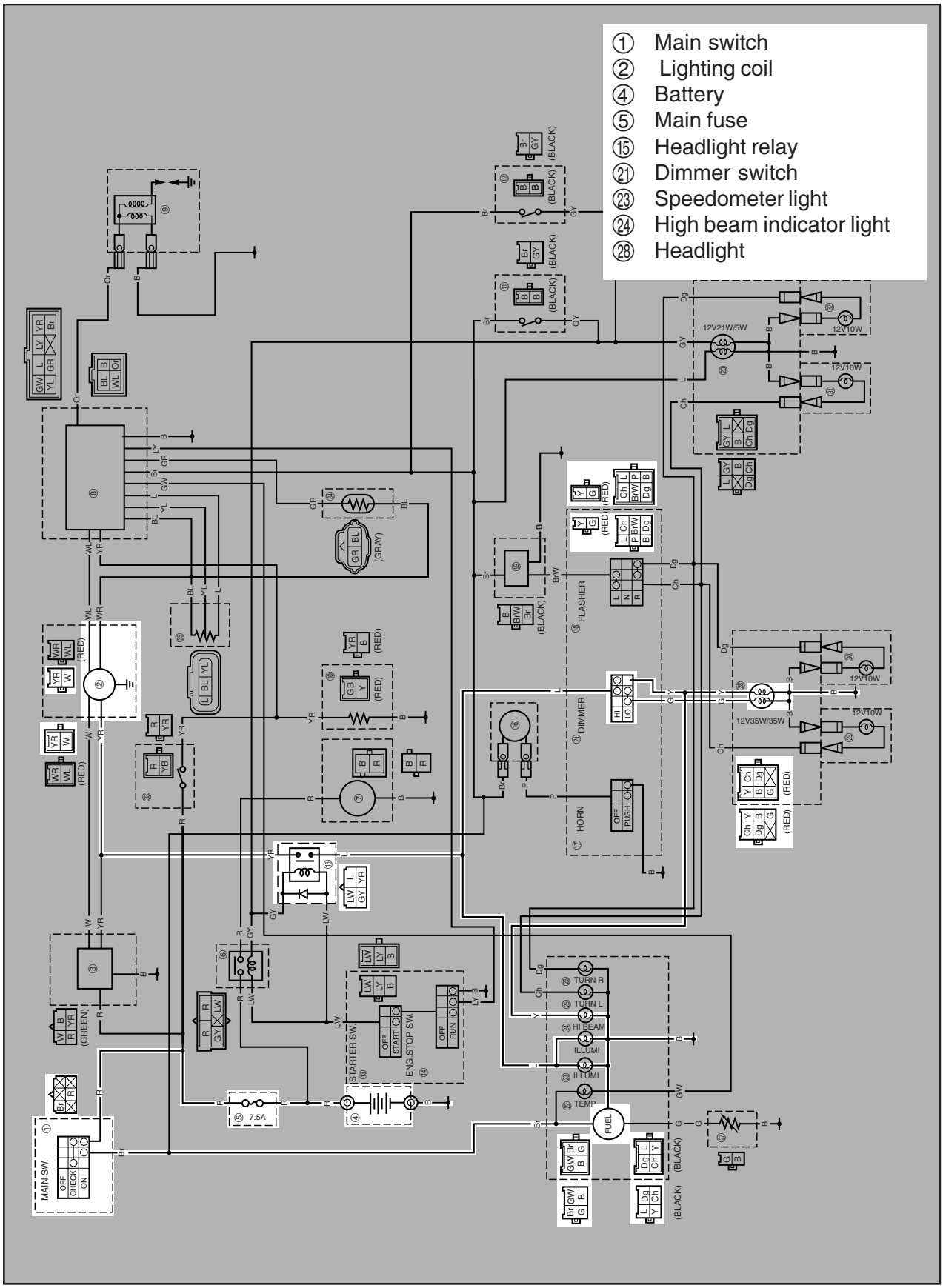
Replace the rectifier/regulator.

Properly connect or repair the charging system's wiring.

EAS00780

LIGHTING SYSTEM

CIRCUIT DIAGRAM



EAS00781
TROUBLESHOOTING

Any of the following fail to light: headlight, high beam indicator light or meter light.

Check:
1. main fuse
2. battery
3. lighting coil resistance.
4. main switch
5. dimmer switch
6. headlight relay
7. wiring connections
 (of the entire lighting system)

NOTE:
- Before troubleshooting, remove the following part(s):

1. Seat/Trunk
2. Battery cover
3. Head light cover
4. Leg shield 1

- Troubleshoot with the following special tool(s).

Pocket tester
90890-03132 (YU-03112-C)

EAS00738
1. Main fuse
- Check the fuses for continuity.
 Refer to "CHECKING THE FUSES" in chapter 3.
- Is the fuse OK?

YES / NO

Replace the fuse.

EAS00739
2. Battery
- Check the condition of the battery.
 Refer to "CHECKING AND CHARGING THE BATTERY" in chapter 3.

Minimum open-circuit voltage
12.8 V or more at 20°C

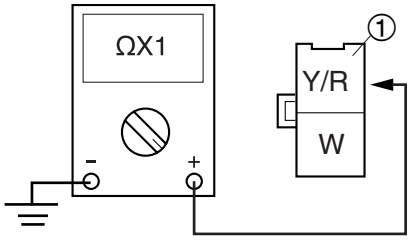
- Is the battery OK?

YES / NO

- Clean the battery terminals.
- Recharge or replace the battery.

EAS00748
3. Lighting coil resistance
- Disconnect the lighting coil coupler from the wire harness.
- Connect the pocket tester ($\Omega \times 1$) to the lighting coil terminal as shown.

Positive tester probe → yellow/red ①
Negative tester probe → ground



- Measure the lighting coil resistance.

Lighting coil resistance
0.256 ~ 0.384Ω at 20°C
(between yellow/red and ground)

- Is the lighting coil OK?

YES / NO

Replace the lighting coil.

EAS00749

4. Main switch
- Check the main switch for continuity. Refer to “CHECKING THE SWITCHES”.
- Is the main switch OK?

YES → NO → Replace the main switch.

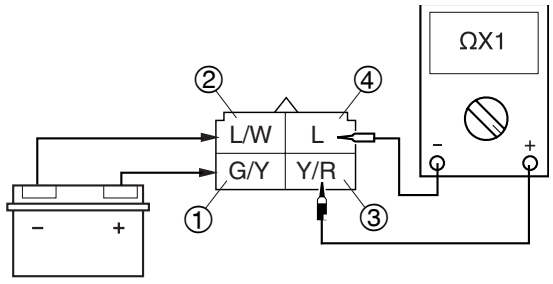
EAS00784

5. Dimmer switch
- Check the dimmer switch for continuity. Refer to “CHECKING THE SWITCHES”.
- Is the dimmer switch OK?

YES → NO → The dimmer switch is faulty. Replace the left handlebar switch.

6. Headlight relay
- Disconnect the headlight relay coupler from the wire harness.
- Connect the pocket tester (Ω × 1) and battery (12 V) to the headlight relay coupler as shown.

Positive battery terminal → green/yellow ①
Negative battery terminal → blue/white ②
Positive tester probe → yellow/red ③
Negative tester probe → blue ④



- Does the starting headlight relay have continuity between blue and yellow/red?

YES → NO → Replace the headlight relay.

EAS00787

7. Wiring
- Check the entire lighting system’s wiring. Refer to “CIRCUIT DIAGRAM”.
- Is the lighting system’s wiring properly connected and without defects?

YES → Check the condition of each of the lighting system’s circuits. Refer to “CIRCUIT DIAGRAM”.

NO → Properly connect or repair the lighting system’s wiring.

EAS00788
CHECKING THE LIGHTING SYSTEM

1. The headlight and the high beam indicator light fail to come on.

1. Headlight bulb and socket
- Check the headlight bulb and socket for continuity.
 Refer to "CHECKING THE BULBS AND BULB SOCKETS"
- Are the headlight bulb and socket OK?

YES

NO

Replace the headlight bulb, socket or both.

2. High beam indicator light bulb and socket
- Check the high beam indicator light bulb and socket for continuity.
 Refer to "CHECKING THE BULBS AND BULB SOCKETS"
- Are the high beam indicator light bulb and socket OK?

YES

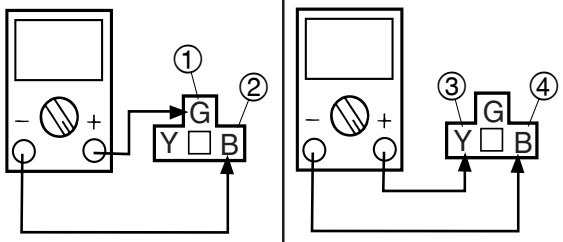
NO

Replace the high beam indicator light bulb , socket or both.

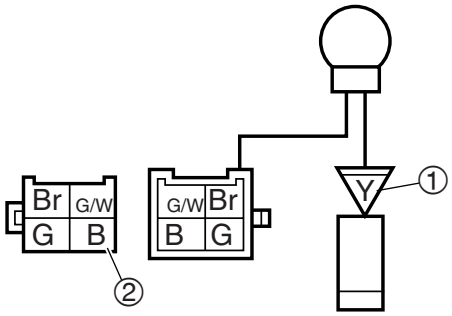
3. Voltage
- Connect the pocket tester (DC 20 V) to the headlight and high beam indicator light couplers as shown.

When the dimmer switch is set to "≡D"
When the dimmer switch is set to "≡D"
Headlight coupler (wire harness side)

Headlight
Positive tester probe → green ①
Negative tester probe → black ②
Positive tester probe → yellow ③
Negative tester probe → black ④



High beam indicator light
Positive tester probe → yellow ①
Negative tester probe → black ②



- Set the main switch to "ON".
- Start the engine.
- Set the dimmer switch to "≡D" or "≡D".
- Measure the voltage (DC 12 V) on the headlight coupler (wire harness side).
- Measure the voltage (DC 12 V) on the dimmer switch coupler (wire harness side) when the dimmer switch is set to "≡D".
- Is the voltage within specification?

YES

This circuit is OK.

NO

The wiring circuit from the main switch to the headlight and hight beam indicator light coupler are faulty and must be repaired.

EAS00789

2. The meter light fails to come on.

1. Meter light bulb and socket

- Check the meter light bulb and socket for continuity.
 Refer to “CHECKING THE BULBS AND BULB SOCKETS”
- Are the meter light bulb and socket OK?

YES

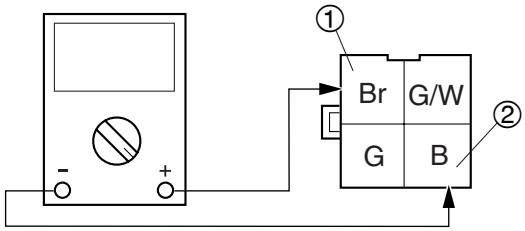
NO

Replace the meter light bulb, socket or both.

2. Voltage

- Connect the pocket tester (DC 20 V) to the meter light coupler (wire harness side) as shown.

Positive tester probe → brown ①
Negative tester probe→ black ②



- Set the main switch to “ON”.
- Measure the voltage (DC 12 V) of brown ① on the meter light coupler (wire harness side).
- Is the voltage within specification?

YES

This circuit is OK.

NO

The wiring circuit from the main switch to the meter light coupler is faulty and must be repaired.
Refer to “CIRCUIT DIAGRAM”.

EAS00754

4. Wiring

- Check the entire lighting system's wiring.
 Refer to "CIRCUIT DIAGRAM".
- Is the lighting system's wiring properly connected and without defects?

YES

Check the condition of each of the lighting system's circuits.
Refer to "CIRCUIT DIAGRAM".

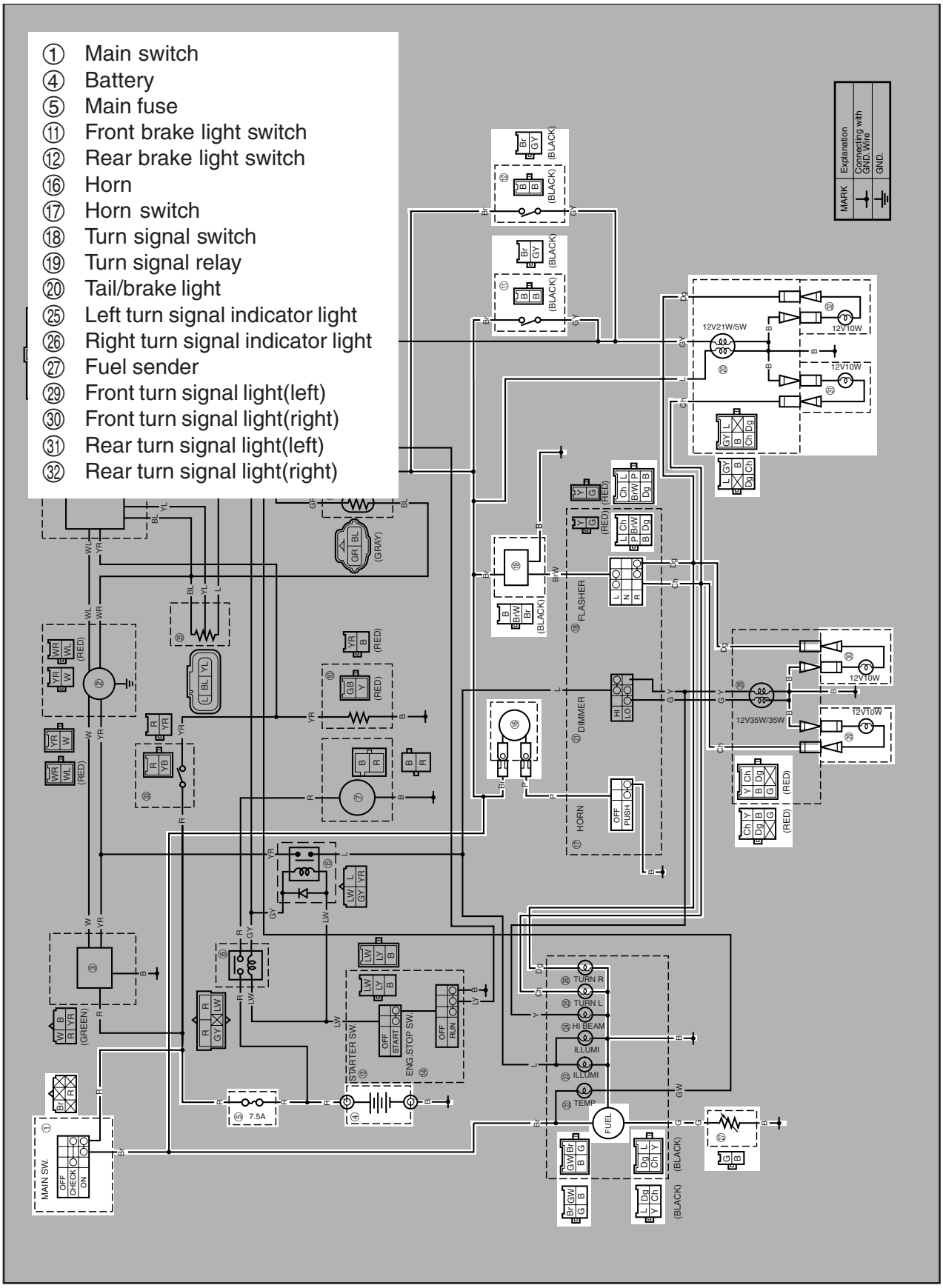
NO

Properly connect or repair the lighting system's wiring.

EAS00793

SIGNALING SYSTEM

CIRCUIT DIAGRAM



EAS00794
TROUBLESHOOTING

- **Any of the following fail to light: turn signal light, brake light or an indicator light.**
- **The horn fails to sound.**

Check:
1. main fuse
2. battery
3. main switch
4. wiring connections
 (of the entire signaling system)

NOTE:
- Before troubleshooting, remove the following part(s):

1. Head light cover/Leg shield 1
2. Battery cover
3. Seat/Trunk
4. Rear carrier
5. Front cover
6. Side cover (left and right)/Rear cover
 - Troubleshoot with the following special tool(s).



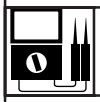
Pocket tester
90890-03132 (YU-03112-C)

EAS00738
1. Main fuse
- Check the main fuse for continuity. Refer to "CHECKING THE FUSE" in chapter 3.
- Is the fuse OK?

YES ⇩ NO ⇩

Replace the fuse.

EAS00739
2. Battery
- Check the condition of the battery. Refer to "CHECKING AND CHARGING THE BATTERY" in chapter 3.



Minimum open-circuit voltage
12.8 V or more at 20°C

- Is the battery OK?

YES ⇩ NO ⇩

- Clean the battery terminals.
- Recharge or replace the battery.

EAS00749
3. Main switch
- Check the main switch for continuity. Refer to "CHECKING THE SWITCHES".
- Is the main switch OK?

YES ⇩ NO ⇩

Replace the main switch.

EAS00795
4. Wiring
- Check the entire signal system's wiring. Refer to "CIRCUIT DIAGRAM".
- Is the signaling system's wiring properly connected and without defects?

YES ⇩ NO ⇩

Check the condition of each of the signaling system's circuits. Refer to "CHECKING THE SIGNALING SYSTEM".

Properly connect or repair the signaling system's wiring.

EAS00796
CHECKING THE SIGNALING SYSTEM

1. The horn fails to sound.

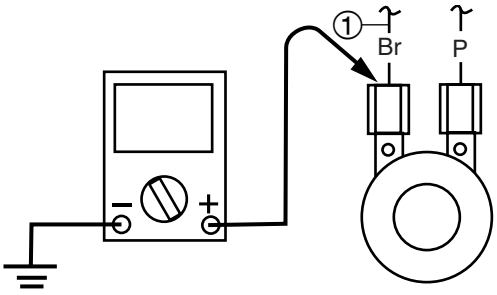
1. Horn switch
- Check the horn switch for continuity. Refer to "CHECKING THE SWITCHES".
- Is the horn switch OK?

YES

NO → Replace the left handlebar switch.

2. Voltage
- Connect the pocket tester (DC 20 V) to the horn connector at the horn terminal as shown.

Positive tester probe →brown ①
Negative tester probe → ground

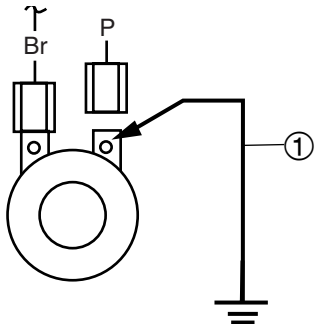


- Set the main switch to "ON".
- Push the horn switch.
- Measure the voltage (DC 12 V) of brown at the horn terminal.
- Is the voltage within specification?

YES

NO → The wiring circuit from the main switch to the horn connector is faulty and must be repaired. Refer to "CIRCUIT DIAGRAM".

3. Horn
- Disconnect the pink connector at the horn terminal.
- Connect a jumper lead ① to the horn terminal and ground the jumper lead.
- Set the main switch to "ON".
- Push the horn switch.
- Does the horn sound?

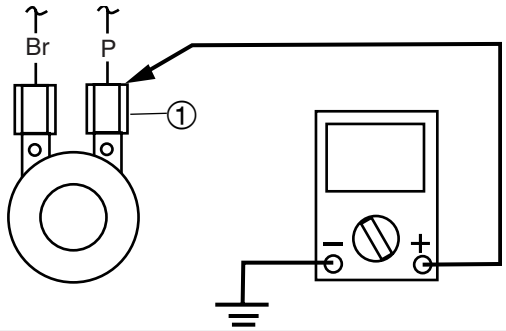


NO

YES → The horn is OK.

4. Voltage
- Connect the pocket tester (DC 20 V) to the horn connector at the pink terminal as shown.

Positive tester probe → pink ①
Negative tester probe → ground



- Set the main switch to "ON".
- Measure the voltage (DC 12 V) of pink ① at the horn terminal.
- Is the voltage within specification?

YES → Repair or replace the horn.

NO → Replace the horn.

EAS00798

2. The tail/brake light fails to come on.

1. Tail/brake light bulb and socket
- Check the tail/brake light bulb and socket for continuity.
 Refer to "CHECKING THE BULBS AND BULB SOCKETS"
- Are the tail/brake light bulb and socket OK?

YES

NO → Replace the tail/brake light bulb, socket or both.

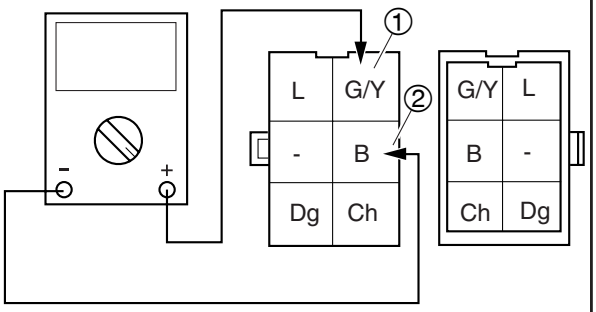
2. Brake light switches
- Check the brake light switches for continuity.
 Refer to "CHECKING THE SWITCHES".
- Is the brake light switch OK?

YES → The wiring circuit from the main switch to the tail/brake light bulb connector is faulty and must be repaired. Refer to "CIRCUIT DIAGRAM".

NO → Replace the brake light switch.

3. Voltage
- Connect the pocket tester (DC 20 V) to the tail/brake light coupler (wire harness side) as shown.

Positive tester probe → green/ yellow ①
Negative tester probe → black ②



- Set the main switch to "ON".
- Pull in the brake levers.
- Measure the voltage (DC 12 V) of green/ yellow ① on the tail/brake light coupler (wire harness side).
- Is the voltage within specification?

YES → This circuit is OK.

NO → The wiring circuit from the main switch to the tail/brake light coupler is faulty and must be repaired. Refer to "CIRCUIT DIAGRAM".

EAS00799

3. The turn signal light, turn signal indicator light or both fail to blink.

1. Turn signal light and turn signal indicator light bulbs and sockets
 - Check the turn signal light bulb and socket for continuity.
 Refer to “CHECKING THE BULBS AND BULB SOCKETS”
 - Check the turn signal indicator light bulb and socket for continuity.
 Refer to “CHECKING THE BULBS AND BULB SOCKETS”
 - Are the turn signal light bulb and socket OK?

YES ⇩

NO ⇩

Replace the turn signal light and/or turn signal indicator light bulb, socket or both.

2. Turn signal switch
 - Check the turn signal switch for continuity.
 Refer to “CHECKING THE SWITCHES”.
 - Is the turn signal switch OK?

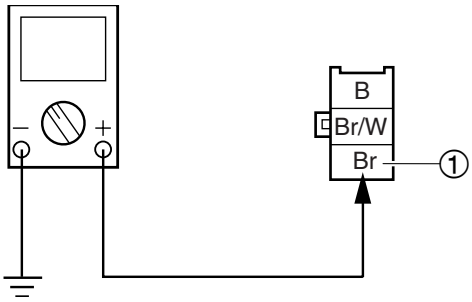
YES ⇩

NO ⇩

Replace the left handlebar switch.

3. Voltage
 - Connect the pocket tester (DC 20 V) to the turn signal relay coupler (wire harness side) as shown.

Positive tester probe ➔ brown ①
Negative tester probe ➔ ground



 - Set the main switch to “ON”.
 - Measure the voltage (DC 12 V) on brown ① at the turn signal relay coupler (wire harness side).
 - Is the voltage within specification?

YES ⇩

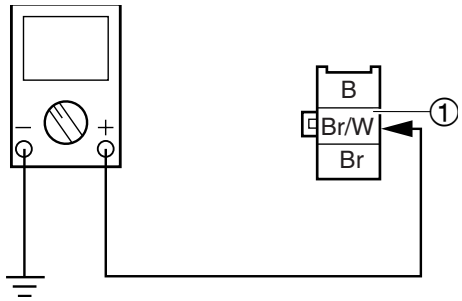
NO ⇩

The wiring circuit from the main switch to the turn signal relay coupler is faultyand must be repaired.
Refer to “CIRCUIT DIAGRAM”.

4. Voltage

●Connect the pocket tester (DC 20 V) to the turn signal relay coupler (wire harness side) as shown.

Positive tester probe→ brown/white ①
Negative tester probe → ground



●Set the main switch to "ON".
●Set the turn signal switch to "⇦" or "⇨".
●Measure the voltage (DC 12 V) on brown/white ① at the turn signal relay coupler (wire harness side).
●Is the voltage within specification?

YES

NO → The turn signal relay is faulty and must be replaced.

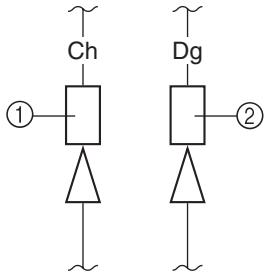
5. Voltage

●Connect the pocket tester (DC 20 V) to the turn signal light connector or meter assembly coupler (wire harness side) as shown.

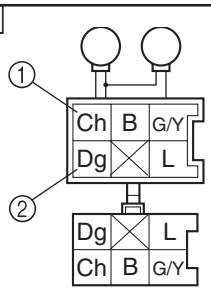
A Front turn signal light
B Rear turn signal light
C Turn signal indicator light

Left turn signal light
Positive tester probe → chocolate ①
Negative tester probe → ground
Right turn signal light
Positive tester probe → dark green ②
Negative tester probe → ground

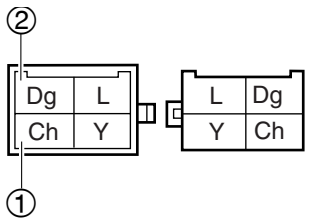
A



B



C



●Set the main switch to "ON".
●Set the turn signal switch to "⇦" or "⇨".
●Measure the voltage (DC 12 V) of the chocolate ① or dark green ② at the turn signal light connector (wire harness side).
●Is the voltage within specification?

YES → This circuit is OK.

NO → The wiring circuit from the turn signal switch to the turn signal light connector is faulty and must be repaired.

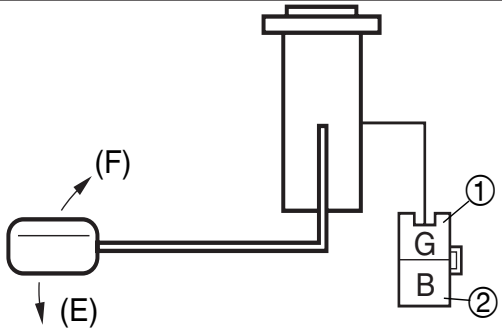
EAS00804

4. The fuel level meter fails to operate.

1. Fuel sender

- Remove the fuel sender from the fuel tank.
- Connect the pocket tester ($\Omega \times 1$) to the fuel sender coupler (wire harness side) as shown.

Positive tester probe ➔ green ①
Negative tester probe ➔ black ②



- Measure the fuel sender resistances.

Fuel sender resistance (up position F)(Ω × 1)
6~8Ω at 20°C
Fuel sender resistance (down position E)(Ω × 10)
93.5~96.5 Ω at 20°C

- Is the fuel sender OK?

YES

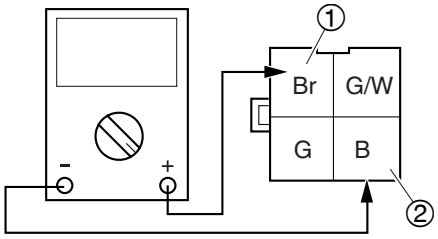
NO

Replace the fuel sender.

2. Voltage

- Connect the pocket tester (DC 20 V) to the meter light coupler (wire harness side) as shown.

Positive tester probe ➔ brown ①
Negative tester probe ➔ black ②



- Set the main switch to "ON".
- Measure the voltage (DC 12 V) of brown ① on the meter light coupler (wire harness side).
- Is the voltage within specification?

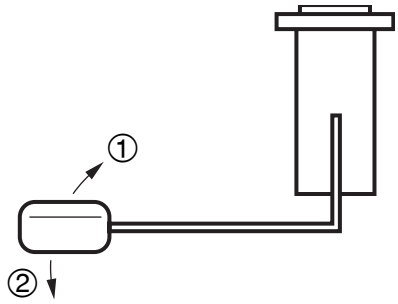
YES

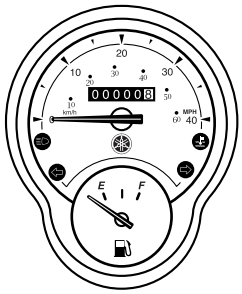
NO

Check the wiring connections of the entire signaling system.
Refer to "CIRCUIT DIAGRAM".

3. Fuel level meter

- Set the main switch to “ON”.
- Move the float up ① or down ②.





- Check that the fuel level meter needle moves to “F” or “E”.

NOTE:
Before reading the fuel level meter, leave the float in one position (either up or down) for at least three minutes.

- Does the fuel level meter needle move appropriately?

YES → This circuit is OK.

NO → Replace the speedo meter.

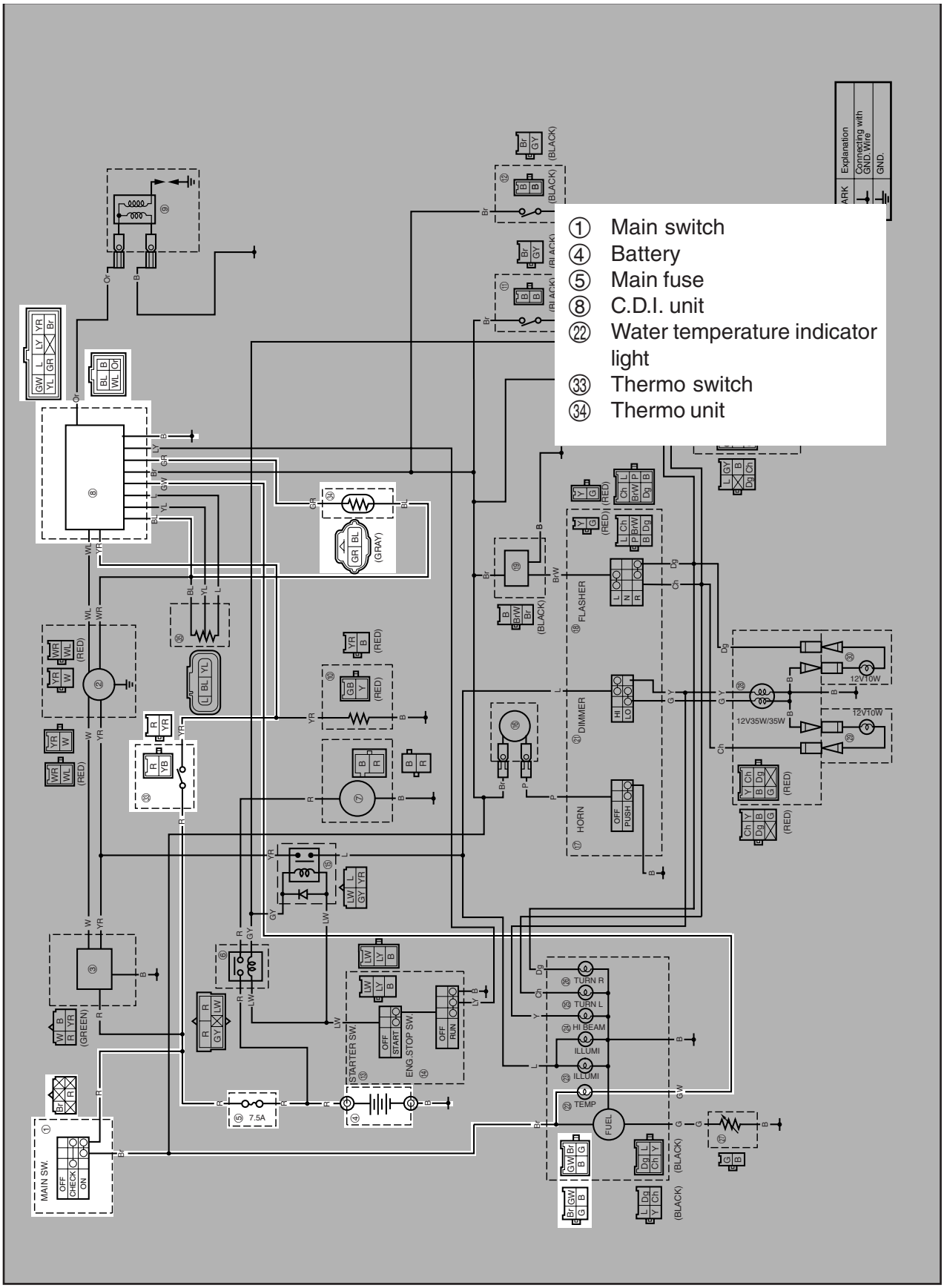
4. Wiring

- Check the entire signaling system’s wiring

EAS00807

COOLING SYSTEM

CIRCUIT DIAGRAM



EAS00808
TROUBLESHOOTING

The cooling system fails to operate.

Check:
1. main fuse
2. battery
3. main switch
4. thermo switch
5. water temperature indicator light
6. wiring connections
 (the entire cooling system)

NOTE:
- Before troubleshooting, remove the following part(s):

1. Seat/Trunk
2. Battery cover
3. Front cover
4. Head light cover
5. Leg shield 1
6. Drain the coolant

- Troubleshoot with the following special tool(s).



Pocket tester
90890-03132(YU-03112-C)

EAS00738

1. Main fuse

- Check the fuse for continuity.
 Refer to "CHECKING THE FUSE" in chapter 3.
- Is the fuse OK?

YES ⇩

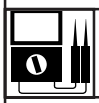
NO ⇩

Replace the fuse.

EAS00739

2. Battery

- Check the condition of the battery.
 Refer to "CHECKING AND CHARGING THE BATTERY" in chapter 3.



Minimum open-circuit voltage
12.8 V or more at 20°C

- Is the battery OK?

YES ⇩

NO ⇩

- Clean the battery terminals.
- Recharge or replace the battery.

EAS00749

3. Main switch

- Check the main switch for continuity.
 Refer to "CHECKING THE SWITCHES".
- Is the main switch OK?

YES ⇩

NO ⇩

Replace the main switch.

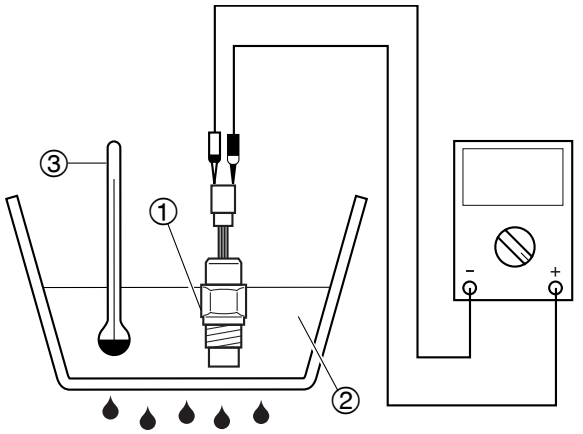
EAS00811

4. Thermo switch

- Remove the thermo switch from the thermostat housing.
- Connect the pocket tester (Ω × 1) to the thermo switch ① as shown.
- Immerse the thermo switch in a container filled with coolant②.
- Place a thermometer③ in the coolant.
- Slowly heat the coolant, then let it cool down to the specified temperature.
- Check the thermo switch for continuity at the temperatures indicated below.

Test step	Coolant temperature Thermo switch	Continuity
1	0 ~56 °C	NO
2	More than65 ± 2 °C	YES
3*	65± 2°C to 56°C	YES
4*	Less than56 °C	NO

Steps 1 & 2: Heating phase
Steps 3 & 4: Cooling phase

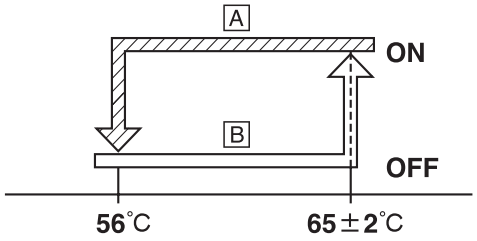


⚠WARNING

- **Handle the thermo switch with special care.**
- **Never subject the thermo switch to strong shocks. If the thermo switch is dropped, replace it.**

Thermo switch
23 Nm (2.3 m • kg, 16.6 ft • lb)
Three bond sealock®10

A Cooling phase
B Heating phase



- Does the thermo switch operate properly as described above?

YES ⇩

NO ⇩

Replace the thermo switch.

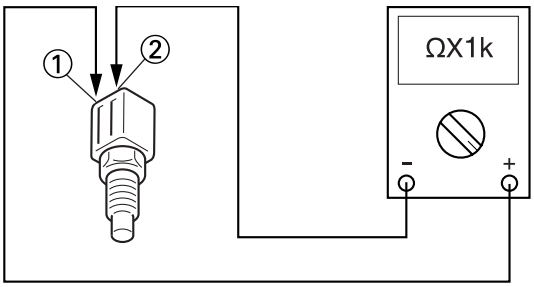
EAS00812

5. The water temperature indicator light fails to operate.

1. Thermo unit

- Remove the thermo unit from the cylinder head.
- Connect the pocket tester (Ω × 1k) to the thermo unit as shown.

Positive tester probe → black/blue ①
Negative tester probe → green/red②



- Measure the thermo unit resistance.

Thermo unit resistance
3.413~4.007k Ω at 80 °C
1.645~1.855k Ω at 100 °C

- Is the thermo unit OK?

YES

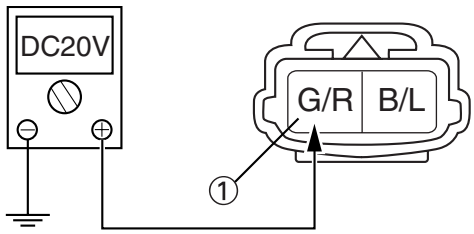
NO

Replace the thermo unit.

2. Voltage

- Connect the pocket tester (DC 20 V) to the meter light coupler (wire harness side) as shown.

Positive tester probe → green/red ①
Negative tester probe → ground



- Set the main switch to "ON".
- Measure the voltage (DC 12 V) of green/red ① on the meter light coupler (wire harness side).
- Is the voltage within specification?

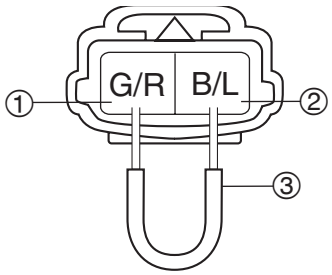
YES

NO

The wiring circuit from the main switch to the thermo unit connector is faulty and must be repaired.

3. Water temperature indicator light

- Remove the thermo unit coupler .
- Set the main switch to “ON”.
- Connect the green/red① and black/blue② with a jumper lead③.



- Is the water temperature indicator light OK?

YES

This circuit is OK.

NO

Replace the water temperature indicator light

EAS00813

6. Wiring

- Check the entire cooling system’s wiring. Refer to “CIRCUIT DIAGRAM”.
- Is the cooling system’s wiring properly connected and without defects?

YES

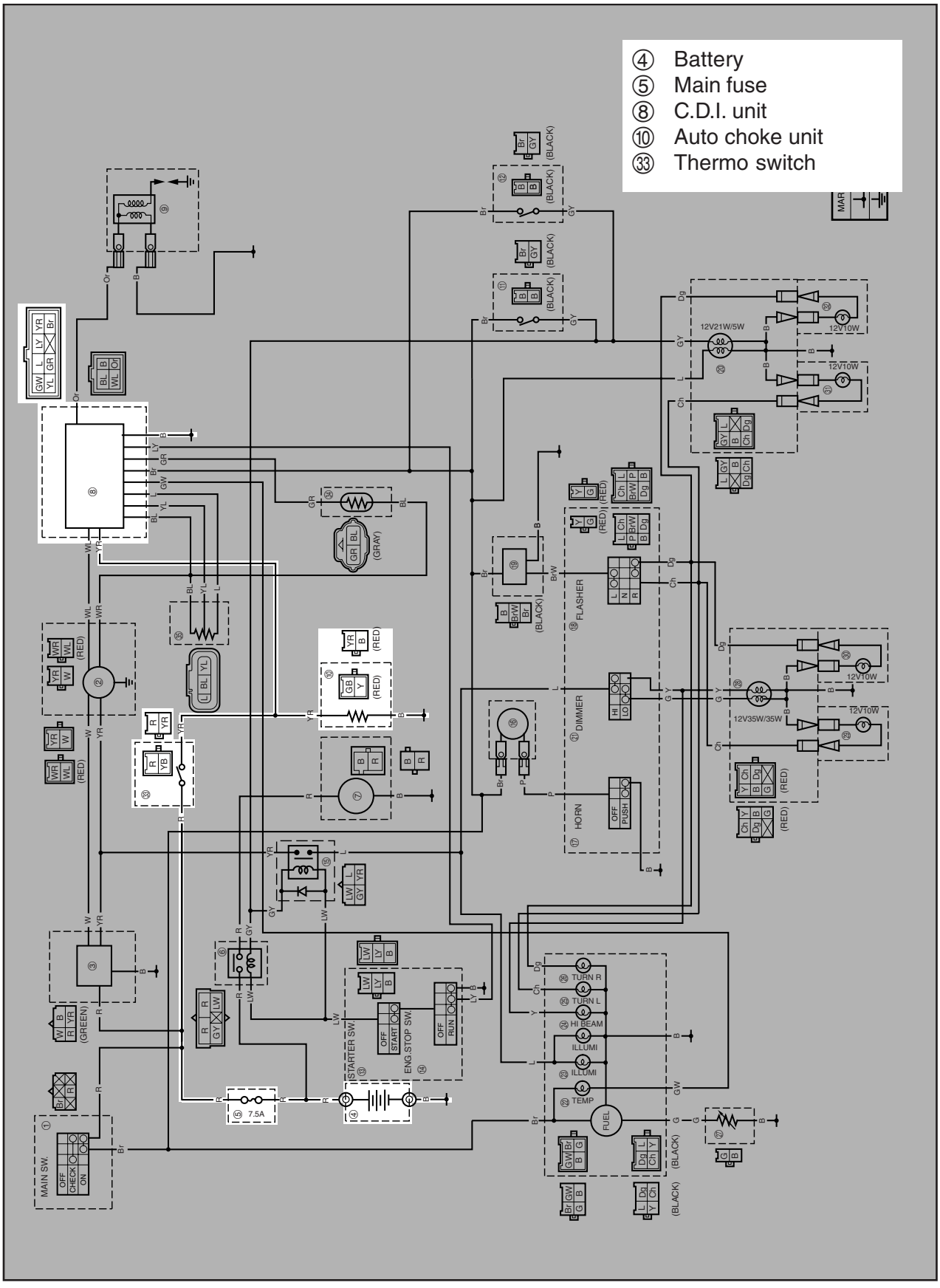
Replace the C.D.I. unit.

NO

Properly connect or repair the cooling system’s wiring.

AUTO CHOKE SYSTEM

CIRCUIT DIAGRAM



EAS00821
TROUBLESHOOTING

The auto choke system fails to operate.

Check:
1. main fuse
2. battery
3. thermo switch
4. auto choke unit
5. wiring connections
 (of the entire autochoke system)

NOTE:
- Before troubleshooting, remove the following part(s):
1. Seat/Trunk
2. Battery cover
3. Front cover
- Troubleshoot with the following special tool(s).



Pocket tester
90890-03132(YU-03112-C)

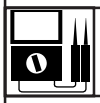
EAS00738
1. Main fuse
- Check the main fuse for continuity. Refer to "CHECKING THE FUSE" in chapter 3.
- Is the fuse OK?

YES

NO

Replace the fuse.

EAS00739
2. Battery
- Check the condition of the battery. Refer to "CHECKING AND CHARGING THE BATTERY" in chapter 3.



Minimum open-circuit voltage
12.8 V or more at 20°C

- Is the battery OK?

YES

NO

- Clean the battery terminals.
- Recharge or replace the battery.

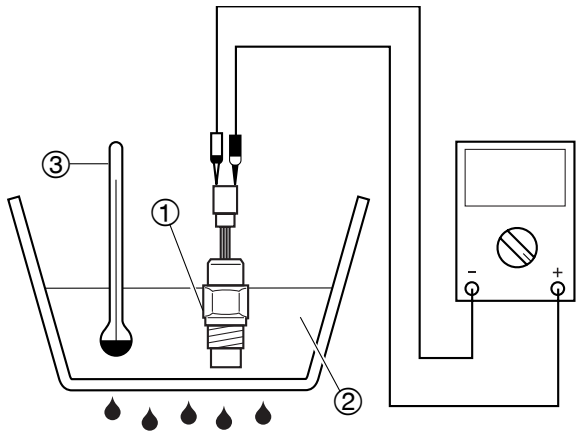
EAS00811

3. Thermo switch

- Remove the thermo switch from the thermostat housing.
- Connect the pocket tester (Ω × 1) to the thermo switch ① as shown.
- Immerse the thermo switch in a container filled with coolant②.
- Place a thermometer③ in the coolant.
- Slowly heat the coolant, then let it cool down to the specified temperature.
- Check the thermo switch for continuity at the temperatures indicated below.

Test step	Coolant temperature Thermo switch	Continuity
1	0 ~56 °C	NO
2	More than65 ± 2 °C	YES
3*	65± 2°C to 56°C	YES
4*	Less than56 °C	NO

Steps 1 & 2: Heating phase
Steps 3 & 4: Cooling phase

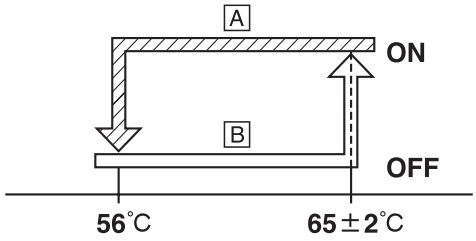


⚠WARNING

- **Handle the thermo switch with special care.**
- **Never subject the thermo switch to strong shocks. If the thermo switch is dropped, replace it.**

Thermo switch
23 Nm (2.3 m • kg, 16.6 ft • lb)
Three bond sealock®10

A Cooling phase
B Heating phase



- Does the thermo switch operate properly as described above?

YES ⇩

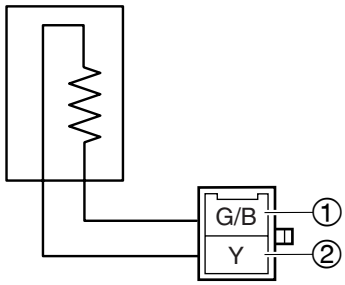
NO ⇩

Replace the thermo switch.

4. Auto choke unit

- Disconnect the auto choke unit coupler from wire harness.
- Connect the pocket tester(Ω × 1) to the Auto choke unit coupler as shown.

Positive tester probe →→green/black ①
Negative tester probe →yellow ②



- Measure the auto choke unit resistance.

Auto choke unit resistance
20 Ω at 20°C

- Is the auto choke unit OK?

YES → NO

Replace the auto choke unit.

5. Wiring

- Check the entire auto choke system's wiring.
 Refer to "CIRCUIT DIAGRAM".
- Is the auto choke system's wiring properly connected and without defects?

YES → Replace the C.D.I. unit

NO → Properly connect or repair the auto choke system's wiring.

CHAPTER 9
TROUBLE SHOOTING

STARTING FAILURE/HARD STARTING 9-1
ENGINE 9-1
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ELECTRICAL SYSTEMS 9-1
INCORRECT ENGINE IDLING SPEED 9-2
ENGINE 9-2
FUEL SYSTEM 9-2
ELECTRICAL SYSTEMS 9-2
POOR MEDIUM-AND-HIGH-SPEED PERFORMANCE 9-3
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FAULTY CLUTCH 9-3
ENGINE OPERATES BUT SCOOTER WILL NOT MOVE 9-3
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POOR STARTING PERFORMANCE 9-3
OVERHEATING 9-4
ENGINE 9-4
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CHASSIS 9-4
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EAS00845

TROUBLESHOOTING

NOTE:

The following guide for troubleshooting does not cover all the possible causes of trouble. It should be helpful, however, as a guide to basic troubleshooting. Refer to the relative procedure in this manual for checks, adjustments, and replacement of parts.

STARTING FAILURE / HARD STARTING

ENGINE

Cylinder and cylinder head

- Loose spark plug
- Loose cylinder head or cylinder
- Damaged cylinder head gasket
- Damaged cylinder gasket
- Worn or damaged cylinder
- Incorrect valve clearance
- Improperly sealed valve
- Incorrect valve-to-valve-seat contact
- Incorrect valve timing
- Faulty valve spring
- Seized valve

Piston and piston ring

- Improperly installed piston ring
- Damaged, worn or fatigued piston ring
- Seized piston ring
- Seized or damaged piston

Air filter

- Improperly installed air filter
- Clogged air filter element

Crankcase and crankshaft

- Improperly assembled crankcase
- Seized crankshaft

FUEL SYSTEM

Fuel tank

- Empty fuel tank
- Clogged fuel tank cap breather hole
- Deteriorated or contaminated fuel
- Clogged or damaged fuel hose

Fuel cock

- Faulty fuel cock
- Damaged vacuum hose
- Improperly routed hose

Carburetor

- Deteriorated or contaminated fuel
- Clogged slow jet
- Clogged pilot air passage
- Sucked-in air
- Damaged float
- Worn needle valve
- Improperly installed needle valve seat
- Incorrect fuel level
- Improperly installed slow jet
- Clogged starter jet

Autochoke unit

- Faulty starter plunger
- Faulty C.D.I.unit
- Faulty thermo switch

ELECTRICAL SYSTEMS

Battery

- Discharged battery
- Faulty battery

Fuse

- Blown, damaged or incorrect fuse
- Improperly installed fuse

Spark plug

- Incorrect spark plug gap
- Incorrect spark plug heat range
- Fouled spark plug
- Worn or damaged electrode
- Worn or damaged insulator
- Faulty spark plug cap

Ignition coil

- Cracked or broken ignition coil body
- Broken or shorted primary or secondary coils
- Faulty spark plug lead

Ignition system
- Faulty C.D.I.unit
- Faulty pickup coil
- Broken AC magneto rotor woodruff key

Switches and wiring
- Faulty main switch
- Faulty engine stop switch
- Broken or shorted wiring
- Faulty front, rear or both brake light switches
- Faulty start switch
- Improperly grounded circuit
- Loose connections

Starting system
- Faulty starter motor
- Faulty starter relay
- Faulty starter clutch

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INCORRECT ENGINE IDLING SPEED

ENGINE

Cylinder and cylinder head
- Incorrect valve clearance
- Damaged valve train components

Air filter
- Clogged air filter element

FUEL SYSTEM

Carburetor
- Faulty starter plunger
- Loose or clogged slow jet
- Loose or clogged slow air jet
- Damaged or loose carburetor joint
- Improperly synchronized carburetor
- Improperly adjusted engine idling speed (throttle stop screw)
- Improper throttle cable free play
- Flooded carburetor

Autochoke unit
- Faulty starter plunger
- Faulty C.D.I. unit

ELECTRICAL SYSTEMS

Battery
- Discharged battery
- Faulty battery

Spark plug
- Incorrect spark plug gap
- Incorrect spark plug heat range
- Fouled spark plug
- Worn or damaged electrode
- Worn or damaged insulator
- Faulty spark plug cap

Ignition coil
- Faulty spark plug lead

Ignition system
- Faulty C.D.I. unit
- Faulty pickup coil

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POOR MEDIUM-AND-HIGH-SPEED PERFORMANCE

Refer to “STARTING FAILURE/HARD STARTING”.

ENGINE

Air filter

- Clogged air filter element

Air intake system

- Bent, clogged or disconnected carburetor air vent hose
- Clogged or leaking air duct

FUEL SYSTEM

Carburetor

- Faulty diaphragm
- Incorrect fuel level
- Loose or clogged main jet
- Faulty accelerating pump

Fuel cock

- Faulty fuel cock

EAS00853

FAULTY CLUTCH

ENGINE OPERATES BUT SCOOTER WILL NOT MOVE

V-belt

- Bent, damaged or worn V-belt
- Slipping V-belt

Primary pulley cam and primary pulley slider

- Damaged or worn primary pulley cam
- Damaged or worn primary pulley slider

Clutch spring(s)

- Damaged clutch spring

Transmission gears

- Damaged transmission gear

CLUTCH SLIPS

Clutch shoe springs

- Damaged, loose or worn clutch shoe spring

Clutch shoes

- Damaged or worn clutch shoe

Primary sliding sheave

- Seized primary sliding sheave

POOR STARTING PERFORMANCE

V-belt

- V-belt slips
- Oil or grease on the V-belt

Primary sliding sheave

- Faulty operation
- Worn pin groove
- Worn pin

Clutch shoes

- Bent, damaged or worn clutch shoe

POOR SPEED PERFORMANCE
V-belt
- Oil or grease on the V-belt

Primary pulley weight(s)
- Faulty operation
- Worn primary pulley weight

Primary fixed sheave
- Worn primary fixed sheave

Primary sliding sheave
- Worn primary sliding sheave

Secondary fixed sheave
- Worn secondary fixed sheave

Secondary sliding sheave
- Worn secondary sliding sheave

EAS00855
OVERHEATING

ENGINE
Clogged coolant passages
- Heavy carbon buildup

Engine oil
- Incorrect oil level
- Incorrect oil viscosity
- Inferior oil quality

COOLING SYSTEM
Coolant
- Low coolant level

Radiator
- Damaged or leaking radiator
- Faulty radiator cap
- Bent or damaged radiator fan

Water pump
- Damaged or faulty water pump

Thermostat
- Thermostat stays closed

Oil cooler
- Clogged or damaged oil cooler

Hose(s) and pipe(s)
- Damaged hose
- Improperly connected hose
- Damaged pipe
- Improperly connected pipe

FUEL SYSTEM
Carburetor
- Incorrect main jet setting
- Incorrect fuel level
- Damaged or loose carburetor joint

Air filter
- Clogged air filter element

CHASSIS
Brake(s)
- Dragging brake

ELECTRICAL SYSTEMS
Spark plug
- Incorrect spark plug gap
- Incorrect spark plug heat range

Ignition system
- Faulty C.D.I. unit

EAS00856
OVERCOOLING

COOLING SYSTEM
Thermostat
- Thermostat stays open

EAS00859

POOR BRAKING PERFORMANCE

Drum brake

- Worn brake shoe
- Worn or rusty brake drum
- Incorrect brake lever position
- Incorrect brake lever free play
- Incorrect brake camshaft lever position
- Incorrect brake shoe position
- Damaged or fatigued brake shoe spring
- Oil or grease on the brake shoe
- Oil or grease on the brake drum

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FAULTY FRONT FORK LEGS

MALFUNCTION

- Bent or damaged inner tube
- Bent or damaged outer tube
- Damaged fork spring
- Bent or damaged damper rod

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UNSTABLE HANDLING

Handlebar

- Bent or improperly installed handlebar

Steering head components

- Improperly installed lower bracket (improperly tightened ring nut)
- Bent steering stem
- Damaged ball bearing or bearing race

Front fork leg(s)

- Unevenly tensioned fork spring (both front fork legs)
- Broken fork spring
- Bent or damaged inner tube
- Bent or damaged outer tube

Rear shock absorber assembly

- Faulty rear shock absorber spring
- Leaking oil

Tire(s)

- Uneven tire pressures (front and rear)
- Incorrect tire pressure
- Uneven tire wear

Wheel(s)

- Incorrect wheel balance
- Deformed cast wheel
- Damaged wheel bearing
- Bent or loose wheel axle
- Excessive wheel runout

Frame

- Bent frame
- Damaged steering head pipe
- Improperly installed bearing race

EAS00866

FAULTY LIGHTING OR SIGNALING SYSTEM

HEADLIGHT DOES NOT COME ON
- Wrong headlight bulb
- Faulty headlight relay
- Too many electrical accessories
- Hard charging
- Incorrect connection
- Improperly grounded circuit
- Poor contacts (main or light switch)
- Burnt-out headlight bulb

HEADLIGHT BULB BURNT OUT
- Wrong headlight bulb
- Faulty battery
- Faulty rectifier/regulator
- Improperly grounded circuit
- Faulty main switch
- Faulty light switch
- Headlight bulb life expired

TAIL/BRAKE LIGHT DOES NOT COME ON
- Wrong tail/brake light bulb
- Too many electrical accessories
- Incorrect connection
- Burnt-out tail/brake light bulb

TAIL/BRAKE LIGHT BULB BURNT OUT
- Wrong tail/brake light bulb
- Faulty battery
- Tail/brake light bulb life expired

TURN SIGNAL DOES NOT COME ON
- Faulty turn signal switch
- Faulty turn signal relay
- Burnt-out turn signal bulb
- Incorrect connection
- Damaged or faulty wire harness
- Improperly grounded circuit
- Faulty battery
- Blown, damaged or incorrect fuse

TURN SIGNAL BLINKS SLOWLY
- Faulty turn signal relay
- Faulty main switch
- Faulty turn signal switch
- Incorrect turn signal bulb
- Faulty battery

TURN SIGNAL REMAINS LIT
- Faulty turn signal relay
- Burnt-out turn signal bulb

TURN SIGNAL BLINKS QUICKLY
- Incorrect turn signal bulb
- Faulty turn signal relay
- Burnt-out turn signal bulb

HORN DOES NOT SOUND
- Improperly adjusted horn
- Damaged or faulty horn
- Faulty main switch
- Faulty horn switch
- Faulty battery
- Blown, damaged or incorrect fuse
- Faulty wire harness



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